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Environmental impact statement

BAYOU BONNE IDEE WATERSHED

Morehouse Parish, Louisiana



U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA



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BAYOU BONNE IDEE WATERSHED
Morehouse Parish, Louisiana

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alton Mangum, State Conservationist
Soil Conservation Service

Sponsoring Local Organization

Morehouse Soil and Water Conservation District
609 East Madison Street
Bastrop, Louisiana 71220

Bonne Idee Gravity Drainage District
Courthouse Building
Bastrop, Louisiana 71220

Morehouse Parish School Board
714 South Washington Street
Bastrop, Louisiana 71220

August 1974

PREPARED BY
UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
P. O. Box 1630
Alexandria, Louisiana 71301

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USDA ENVIRONMENTAL IMPACT STATEMENT

Bayou Bonne Idee Watershed Project

Morehouse Parish

Louisiana

Prepared in Accordance with

Sec. 102 (2)(c) of P.L. 91-190

Summary

- I. Final
- II. Soil Conservation Service
- III. Administrative
- IV. Description of Project Purpose and Action: This project is for watershed protection, flood prevention, drainage, and recreation in Morehouse Parish, Louisiana to be implemented under the authority of the Watershed Protection and Flood Prevention Act (PL-566, 83d Congress, 68 Stat. 666), as amended. Approximately 202 miles of channel work with appurtenant measures, construction of two water control structures, modification of two water control structures, a recreation development, and mitigation measures will be required. The channel work will involve clearing and debris removal on 59 miles of existing channels, 15 miles of new channel construction, and 128 miles of enlargement by excavation to provide improved water management in a flatland watershed that is 80 percent agricultural cropland and grassland. Of the 187 miles of work proposed on existing streams or channels, 126 miles will involve those with only ephemeral flow, and 31 miles with intermittent flow. The balance involves either existing ponded or flowing water or completely new channels where none existed before.
- V. Environmental Impacts Including Favorable and Adverse Environmental Effects: Floodwater and drainage problems will be reduced resulting in lower production cost, higher prices, and higher yields. Average annual farm income will increase by about \$1,700, sediment will be reduced by 128,500 tons during the project installation period, and an increase of 97,200 visitor days of recreation activities will be provided.

Disturbance of wildlife habitat along channel banks will result in the following population reductions - deer, 3.6 percent; squirrel, 6.1 percent; rabbit, 0.2 percent; resident waterfowl, 0.2 percent; and migratory waterfowl, 0.3 percent. Water temperatures will increase by about 5 degrees Fahrenheit.

VI. List of Alternatives:

- A. Land treatment only
- B. Flood area zoning
- C. Floodwater retarding structures
- D. Floodproofing
- E. Channel work required to provide the 1.5-, 3-, and 5-year levels of protection
- F. No project action

VII. Comments Have Been Received from the Following Agencies:

Department of Agriculture
Department of Health, Education,
and Welfare
Department of the Interior
Department of Transportation
Environmental Protection Agency
Department of the Army
Louisiana Department of Art,
Historical and Cultural
Preservation

Louisiana Department of
Public Works
Louisiana Department of
Highways
Louisiana State Soil and
Water Conservation Committee
Commission on Intergovernmental
Relations
Louisiana Wildlife Federation,
Inc.

VIII. Draft Statement Received by CEQ on April 22, 1974.

USDA SOIL CONSERVATION SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT

for

Bayou Bonne Idee Watershed, Louisiana

Installation of this project constitutes an administrative action. Federal assistance will be provided under authority of Public Law 83-566, 83d Congress, 68 Stat. 666, as amended.

SPONSORING LOCAL ORGANIZATION

Morehouse Soil and Water Conservation District

Bonne Idee Gravity Drainage District

Morehouse Parish School Board

PROJECT PURPOSES AND GOALS

The project objectives are:

1. Provide improved farming conditions to increase farm family incomes and improve living conditions.
2. Reduce average soil loss to the minimum consistent with sound conservation farming methods.
3. Provide agricultural open land a level of protection which would allow runoff from a storm with an average frequency occurrence of once every 3 years to be back within banks 24 hours after the rainfall ceases.
4. Provide additional permanent water and improve the quality of existing water in Bayou Bonne Idee to enhance its use for recreation.
5. Facilitate achieving the preceding objective by providing acceleration of the going land treatment program so that about 40 percent of the agricultural land will be adequately treated by the end of the project installation period.

PURPOSES AND GOALS

6. Provide local people water-based recreational facilities which will meet the needs of the watershed residents.
7. Install project measures in a manner which will not damage wildlife. If damages should occur, measures will be constructed which will mitigate losses.

The purposes of the project are watershed protection, flood prevention, drainage, and recreation.

PLANNED PROJECT^{1/}

Land Treatment

The effective soil and water conservation program, planned by the Morehouse Soil and Water Conservation District, is based on proper use of the land and the establishment and maintenance of adequate flood prevention and water management structural measures. To install such a conservation program, 34,250 acres of crop, pasture, forest, and other land will have all the necessary conservation practices, individually or in combination, established on them by the end of the 10-year installation period. The remainder of the acreage will have a complete soil and water conservation program underway by the end of this same period. Appropriate land treatment measures to be installed and their functions will include, but are not limited to:

Land Treatment Measure

Function

Conservation Cropping System

Using rotations that contain grasses and legumes as well as rotations in which the desired benefits are achieved without the use of such crops.

Crop Residue Use

Using plant residues to protect cultivated fields during critical erosion periods.

Drainage Land Grading
(Land Forming)

Reshaping the surface of land to be drained by grading to planned slopes.

Drainage Main or Lateral

Constructing open drainage ditches to a designed size and grade to remove surface water for maximum plant growth.

Grade Stabilization Structure

Stabilizing the grade or controlling head cutting to reduce sediment in natural or artificial channels.

Pasture and Hayland Management

Proper using or treating of pastureland and hayland to provide maximum livestock forage and to control erosion.

^{1/} All information and data, except as otherwise noted by reference to source, were collected or compiled during watershed planning investigation by the Soil Conservation Service and the Forest Service, U.S. Department of Agriculture.

PLANNED PROJECT

Land Treatment Measure

Function

Pasture and Hayland Planting

Establishing and reestablishing long-term stands of adapted species of perennial, biennial, or reseeding forage plants for livestock forage and to control erosion.

Wildlife Wetland Habitat Management

Retaining, creating, or managing wetland habitat for wildlife to provide maximum food and cover.

Wildlife Upland Habitat Management

Retaining, creating, or managing wildlife habitat other than wetland to provide maximum food and cover.

Forest Land Management

Properly using and protecting forest land to provide increased realization of wildlife, recreation, timber, and watershed benefits through multiple use.

Improved Cutting Practices

Harvesting and treating forest stands to minimize disturbance, encourage growth of a new stand, and improve species composition.

These are the basic soil and water conservation practices required to obtain an adequate land treatment program in this watershed. However, the structural measures will have to be installed before most of the land treatment measures can be applied.

Adequately treated land is defined as land used within its capability and on which the conservation practices that are essential to its protection and planned improvement have been applied. Providing necessary drainage and maintaining proper ground cover are the most important practices to consider in treating land adequately in this watershed. These measures are necessary in order to remove surface water at such a rate that healthy plant growth will be sustained and erosion kept to a minimum.

With improved drainage, the plants will utilize more of the fertilizer applied, grow larger, and provide better ground cover. Erosion and consequent sediment will be reduced by the application of land treatment measures such as conservation cropping systems and crop residue use. Reductions in sediment will improve the environment since, nationwide, it is recognized as a major pollutant which adversely affects water quality and fish and wildlife habitat by: (1) being a carrier of harmful chemicals if such are present, (2) reducing spawning success if concentrations are high enough, and (3) reducing the production of basic food chain organisms and, consequently, affecting dependent higher organisms.

PLANNED PROJECT

About 34,250 acres of which 29,000 are cropland, 4,000 are pasture, 250 are forest, and 1,000 are other, will receive all the conservation practices necessary during the project installation period to be classed as adequately treated. In addition, a conservation plan will have been prepared and land treatment begun on about 61,000 acres of cropland, about 8,000 acres of pastureland, and about 3,000 acres of forest land.

The basic conservation measures to be planned and applied on cropland include conservation cropping systems, crop residue use, land grading and smoothing, drainage mains or laterals, and grade stabilization structures. Control of headcut and channel bank erosion where concentrations of water enter deeper channels will be accomplished through the installation of side inlets (structures for water control-type 3, Appendix D, figure 7). Those areas with drainage areas larger than 30 acres will be included in the project structural measures. The application of these measures on cultivated land will enhance periodic use of high residue-producing and soil-conditioning crops, provide controlled disposal of excess surface water, and increase infiltration in the soil and reduce sheet and gully erosion.

The 4,000 acres of pasture that will be fully treated and the 8,000 acres where treatment will have begun will contribute materially to the establishment of a sound livestock grazing program, facilitate more uniform distribution of grazing, and permit management which will provide effective ground cover for runoff and erosion control. The treatment will include the proper application of the following basic conservation practices: pasture and hayland planting, pasture and hayland management, and drainage mains or laterals.

Approximately 9,000 acres of multiple-use wildlife habitat on cropland and 1,000 acres on other land will be maintained, created, or improved during the installation of land treatment measures by establishing perennial, biennial, or annual plants for wildlife food or cover, and diking and installing water control structures on wetlands. Farmers and landowners who want to install measures for wildlife habitat improvement and harvest, install commercial recreation enterprises, and manage fish ponds will be able to obtain technical assistance from the soil and water conservation district. About 35 commercial recreation enterprises will be established. These enterprises pertain mostly to hunting on the 10,000 acres to be treated for wildlife habitat. The fee arrangement will be according to the landowners' preference.

The forest land will continue to receive fire protection under the Cooperative Forest Fire Control Program. The land treatment program will consist of improvement cutting practices applied on 250 acres and an accelerated technical assistance effort consisting primarily of multiple-use forest management plan development and application. The landowners will be assisted by planners in bringing about 3,000 acres of forest land under management during the installation period. The utilization of proper forest management practices on 250 acres will enhance wildlife habitat. Periodic timber thinnings will open up the canopy stimulating browse and mast production.

PLANNED PROJECT

The water bank program has been introduced in Morehouse Parish. The Morehouse Soil and Water Conservation District and Agricultural Stabilization and Conservation Service County Committee have the responsibility for administering this program locally. They will continue trying to expand the program and encourage wetland owners to enroll.

By accelerating the present rate of technical assistance, it is expected that during the 10-year installation period, the following accomplishments will be made:

1. Two hundred and thirty-three cooperative agreements will be signed by landowners or operators who will become soil and water conservation district cooperators.
2. Two hundred and thirty soil and water conservation plans will be developed with land users who are now or will become soil and water conservation district cooperators.
3. One hundred and seventy conservation plans now in use will be updated.
4. Soil surveys will be made on the remaining 105,420 acres which have not yet been surveyed.
5. Complete land treatment measure programs will be installed on 34,250 acres and treatment begun on an additional 72,000 acres.

Structural Measures

Measures in this plan are comprehensive in nature and encompass the multiple-use concept of resource planning. The primary benefits that will accrue as a result of project installation will be from flood reduction and drainage and recreation. Prevention of damages to fish and wildlife and subsequent mitigation measures are also major project objectives. For purposes of discussion, the measures were grouped into three categories - channel work, recreational development, and mitigation measures.

Channel Work consists of the clearing in Bayou Bonne Idee proper and all other channel work including appurtenances. About 187 miles of the 233 miles existing channels will require work. Of this 187 miles, about 59 miles will be cleared of brush and debris with little or no soil disturbance and 128 miles will be excavated. An additional 15 miles of new channels will also be excavated giving a total of 202 miles of channel work. The 31 miles of channels which do not require work will require maintenance.

Of the 202 miles of channel work, about 126 miles (63 percent) have ephemeral flow, 45 miles (22 percent) have ponded water, and 31 miles (15 percent) have intermittent flow. Ephemeral channels are those that have flow only during periods of surface runoff; otherwise, they are dry. Intermittent channels are those that have continuous flow during some seasons of the year, but little or no flow during other seasons. Channels

with ponded water are those with no noticeable flow caused by lack of outlet or high ground water table. After project installation, 126 miles (63 percent) will have ephemeral flow, 55 miles (27 percent) will have ponded water, and 21 miles (10 percent) will have intermittent flow. The 10-mile change from intermittent flow to ponded water will result from the construction of Water Control Structures No. 1 and No. 4 on Bayou Bonne Idee proper.

Of the 202 miles of channel work, about 21 miles are classified as unmodified, well-defined, natural channels, 166 miles are manmade or previously modified channels, and 15 are nonexistent or practically no-defined channels. All of these will be modified by the project. Of the 21 miles of natural channel, about 10 miles in Bayou Bonne Idee will be changed from intermittent flow with a wooded channel bed to ponded with a cleared channel bed. Another 2-mile section of natural channel in the bayou will be cleared and remain intermittent. The remaining 9 miles of natural channels have ephemeral flows. These will be excavated.

Of the 166 miles of channels which are manmade or previously modified, about 19 have intermittent flow, 102 miles have ephemeral flow, and 45 miles have ponded water. The project will not change the type of flows presently existing in these channels. Of the 19 miles of intermittent flow, about 1 mile will be cleared and 18 will be excavated. Of the 102 miles which have ephemeral flows, about 1 mile will be cleared and 101 miles will be excavated. The 45 miles of existing ponded water area will be cleared ranging from 60 to 80 percent.

Bayou Bonne Idee (Channel M-1): Approximately 57 miles of this stream will be selectively cleared for flood prevention, drainage, and recreation. Clearing will be accomplished in such a manner that the refuse will be pressed into the soil in the bayou bottom. Den trees and large aesthetically desirable trees will be left in the channel. Due to previous alterations, only 12 of these 57 miles can be considered in a natural condition, and these have intermittent flows. About 12 miles of the main channel in Bayou Bonne Idee will be cleared leaving only trees and low shrubs along the bank. The remaining 45 miles will require clearing ranging from 60 to 80 percent to provide open water areas.

At present there are two type 1 water control structures (No. 2 and No. 3) in the bayou. These two structures created approximately 45 miles (1,400 acres) of water within the bayou's total 64 miles length (see Appendix D, figure 6). Before the two existing structures were installed, the bayou was an intermittent stream with sections having only ephemeral flows.

After Water Control Structures No. 1 and No. 4 are installed, the bayou will have 55 miles (1,900 acres) of permanent water. Structures No. 1 and No. 4 will change 370 acres and 130 acres, respectively, of intermittent water to permanent water. An additional 260 acres of existing permanent water presently above Water Control Structure No. 3 will be increased in depth by 2 feet by Water Control Structure No. 4. Water control structure locations are shown in Appendix C, figure 8.

Maximum depths of Pools 1, 2, 3, and 4 will be 13 feet, 13 feet, 10 feet, and 6 feet, respectively; average depths will be 6.6 feet, 7.2 feet, 5.3 feet, and 3.1 feet, respectively. A profile of Bayou Bonne Idee and corresponding pool levels is shown in Appendix D, figure 6.

Of the 370 acres (9.6 miles) of permanent water created above Water Control Structure No. 1, all the vegetation will be cleared up to the permanent water line on 323 acres. The other 47 acres located immediately below Water Control Structure No. 2 will be left undisturbed.

Of the 670 acres behind Water Control Structure No. 2, 530 will be cleared. Clearing will be done in the middle of the bayou in the deeper water. About 140 acres of vegetation, predominately buttonbush and cypress located in shallow water along the banks, will be left undisturbed.

After Water Control Structure No. 4 is built, Water Control Structure No. 3 will control about 15 miles or 470 acres of permanent water. About 370 acres of vegetation in the middle of the bayou will be cleared, and about 100 acres of vegetation within the channel along the edges will be left undisturbed.

Of the 390 acres of land under permanent water above Water Control Structure No. 4, about 280 acres will be cleared of vegetation and 110 acres will be left undisturbed, preserving the vegetation within the channel along the edges.

Aquatic weeds, debris, and brush that is presently choking the channel will be removed. This clearing will serve the purposes of flood prevention and drainage by improving the hydraulics of the channel for water removal. It will also serve recreation and fish and wildlife by removing undesirable vegetation. This will improve the water quality and accommodate boat passage. Desirable cover for wildlife, large mast-bearing trees, and aesthetically valuable trees located on the banks and in the edges of the water will not be removed. These undisturbed areas and den trees, preserved as a result of selective clearing, will serve as nesting and brood cover for wood ducks.

The removal of decaying debris and undesirable vegetation will improve water quality and fishery habitat by (1) allowing better air and water movement, (2) reducing the amount of duckweed which will increase the aeration of the water, and (3) increasing the oxygen content of the water.

Fish population in the pools are expected to increase for several other reasons. All four water control structures will be equipped with facilities to regulate the water level for maximum fishery management efficiency. Fluctuation of the water level will (1) help control undesirable aquatic vegetation, (2) help keep the proper proportion of forage-predator fish species, and (3) release

additional nutrients into the water by exposing portions of the bayou bottom to air and sunlight.

All Other Channel Work: This includes 11 systems of mains and laterals (M-2 to M-13) and the laterals draining into Bayou Bonne Idee proper. A total of 145 miles of channels will require work. Of these, 130 miles are existing channels to be reworked and 15 miles are new channels. Of the total 130 miles, 9 are unmodified, well-defined, natural drains and 121 miles are manmade or previously modified channels; 128 miles will be enlarged and 2 miles will be cleared. Of the total 145 miles, about 126 miles have ephemeral flows, about 19 miles have intermittent flows, and less than half a mile has ponded water.

New sections of channels will be constructed for better alignment of existing channels or to create more effective use of existing land patterns and drainage systems. Of the 15 miles of new channels, about 0.25 miles are for realignment and approximately 1 mile is for diversions; the remainder are new channels. Short recesses for sediment interception will be installed where needed at the junctions of principal laterals with the main channels.

Berms and spoil will be situated in a manner to allow maintenance equipment access to the channels as necessary for work at a later date. Where necessary, culverts will be placed across the berm in existing channels and structures for water control will be constructed to allow continuity of access for maintenance. Figure 1 in Appendix D shows a typical profile and cross section of a channel. Excavation of Channels L-1A, L-1C, L-7I, and L-7IIA will be terminated before they reach wetlands. Channel excavation on L-1E and L-1F will be terminated as they reach wetlands. Although little interest was shown during project formulation, these preserved wetlands provide opportunities for the establishment of commercial hunting enterprises. Maintaining these wetlands will also preserve water quality by allowing flow to filter through the natural, undisturbed areas.

Water control structures-type 3 (see Appendix D, figure 7) will be installed to prevent erosion and thus protect the channel from excessive sedimentation, reduce maintenance cost, and ensure proper functioning of the channels. These structures are similar to grade stabilization structures except that they are on a smaller scale, less complex, and are located on laterals entering project channels. They are considered appurtenant measures and will be installed on channels with a drainage area greater than 30 acres. A sample survey of channels showed that an average of one such structure will be needed on each 1.7 miles of project channel to be improved. Erosion problems caused by small drainage areas of less than 30 acres will be remedied through the Land Treatment program.

Grade stabilization structures (see Appendix D, figure 4) are considered integral parts of project channels and will be installed as needed. They will protect the channels and main outlets from excessive sedimentation, thereby reducing downstream turbidities

and maintenance. Preliminary studies indicate that five grade stabilization structures are needed. The exact location of these structures will be determined during the operations stage when additional survey data and foundation investigations are obtained.

Approximately 2,083 acres of rights-of-way will be disturbed because of Other Channel Work. This 2,083 acres includes 1,020 acres of open land, 815 acres of wooded channel bank, and 248 acres of forest land. Two miles of channels require only clearing as a project measure. This clearing will be accomplished within the channel and on the berms as required for maintenance access. The refuse and debris will be stacked along side of the berm. Clearing of brush and trees on 128 miles of channels requiring excavation will be necessary to allow for channel enlargement, berms, and spoil placement. Excavation in most cases will be accomplished from one side of the channel. Consequently, disturbance of habitat along these channels will be minimized.

Ditch side slopes, berms, and spoils will be seeded to grasses. The planted cover will provide food, cover, and protection of wildlife and also prevent erosion, thus reducing sedimentation turbidity in channel waters. The spoil will be allowed to revegetate to forbs, shrubs, and hardwoods by natural plant succession. These areas, in various stages of plant succession, are beneficial to wildlife such as deer, quail, and rabbits by providing food and cover.

Several alternatives for establishing vegetative cover on the disturbed areas were evaluated by the Louisiana Wild Life and Fisheries Commission, the U.S. Fish and Wildlife Service, and the Soil Conservation Service. Due consideration was given toward providing the most expedient method of reestablishing vegetation to prevent erosion and provide food and cover for wildlife. The most practical approach would be to establish a ground cover and allow natural plant succession to occur.

All channel slopes which are treatable will be limed and seeded the same day of construction. (See Appendix D, figure 1 for limits of revegetation). Berms will be limed and seeded immediately after heavy or plant-destroying equipment has ceased traveling on the berm. Spoil on open land in most cases will be spread. Depending on the season of the year and the crops being grown, spreading of the spoil may or may not be accomplished soon after construction. If the spoil is not to be spread, it will be shaped, limed, and seeded. The spoil from Channel M-11 will be placed in a continuous row on the south side of the channel, shaped, and seeded. It will serve as a barrier which will reduce and retard spillover of flood-water from large storms into Evaluation Unit III. Spoil in forest land will be stacked, shaped, limed, and seeded. Depending upon soil type and season of the year, species such as the following can be used: common Bermudagrass, Pensacola bahiagrass, browntop millet, ryegrass, and fescue. When spoil is spread on pasture, the same type vegetation as presently exists will be planted if the owner so desires.

Alterations, modifications, or reconstruction of some existing facilities will be necessary to insure proper functioning of planned structural measures. These include, but are not limited to, replacing or changing 9 bridges and 3 culverts on State and Federal highways, 50 bridges and 20 culverts on parish and private roads, pipelines at 8 locations, and utility lines and fences at about 35 locations.

The required capacity which will be used for culverts is 125 percent of the design channel flow with a head loss of approximately 0.2 foot. Bridges will be required to allow passage of the flow from the channel cross-section and still have the appropriate freeboard allowance.

All bridge and culvert changes will be coordinated with the responsible agencies at the construction design stage. This will insure compliance with their standards and specifications. Structural measure installations are expected to be completed in a 6-year period.

Recreation Development consists of installing two new water control structures-type 1 (see Appendix D, figure 2), modification of two existing ones, three access points (boat launches), and a recreational facility (see Appendix D, figure 3). The type 1 water control structures will be of such capacity to allow the passage of the 100-year frequency storm flow and will be equipped with drawdown structures with stop-log inlets (Appendix D, figure 2) capable of drawdown from the top of the stream, providing for aquatic vegetative control and fish management.

Water Control Structure No. 1 - This structure will be located about one-half mile above the mouth of Bayou Bonne Idee. It will cause water to be stored in the bayou as far upstream as Water Control Structure No. 2. This water will serve the purposes of recreation and fish and wildlife. A drawdown facility for the purpose of fishery management will be installed to allow the water to be lowered at the rate of about 4 inches per day.

Water Control Structure No. 2 - In 1957, a low-level water control structure known locally as the "Barham Weir" (see Appendix C, Project Map) was constructed. This structure will be modified by the installation of a drawdown facility to permit water level control for fishery management. Its drawdown capability will be the same as Water Control Structure No. 1.

Water Control Structure No. 3 - In 1959, another low-level water control structure was installed approximately 1 1/2 miles south of Louisiana Highway No. 2 (see Project Map, Appendix C). This structure is known locally as "The Goatwalk." It impounded water up to approximately 1 mile south of Bonita. This structure will also be modified by the installation of a drawdown facility to permit water level control for fishery management. Its drawdown capability will be the same as Water Control Structure No. 1.

Recreational Facilities - Three access points (boat launching areas) will be installed at an approximate midpoint of the pools

PLANNED PROJECT

formed by Water Control Structures No. 1, No. 2, and No. 4 (see Project Map, Appendix C). A parking area, trash receptacles, a boat ramp, a boat dock, and a pit toilet will be provided at each of these three areas.

The main public recreational facility (see Appendix D, figure 3) will be located on a 110-acre peninsula formed by the Bayou Bonne Idee approximately 1 1/2 miles south of Louisiana Highway No. 2 near Water Control Structure No. 3 (see Project Map, Appendix C). Approximately half of the area is wooded and will be left in the natural state as nearly as possible commensurate with priority usage. Activities will include picnicking, camping, fishing, boating, bicycling, and nature study. Facilities will include access roads, parking areas, a boat launching ramp, boat docks for the safe loading and unloading of passengers, a supply of freshwater, sanitary facilities, nature and bicycle trails picnicking and camping sites, maintenance headquarters and shelters. Sanitary facilities include flush toilets, and septic tanks. The soils in these areas are loamy and will support these systems.

The septic tanks and disposal fields will be constructed in accordance with the Louisiana Health Department's requirements and the U.S. Department of Health, Education, and Welfare's recommendations as outlined in its Manual of Septic Tank Practice. The facilities will be located in the center of the area, the furthest distance from the banks of the bayou, and at the highest elevation. Water wells will be located away from the septic tanks and disposal fields at a distance no closer than the minimum required distance given in the Department of Health, Education, and Welfare's publication, Environmental Health Practice in Recreational Areas.

The recreational facilities will provide 75 percent of the needs for an area with a 10-mile radius of the main facility. The population within this area is about three times greater than in the watershed.

Mitigation Measures consist of Water Control Structure No. 4-Type 1 to be installed in the Bayou Bonne Idee wildlife areas, and water control structures-type 2 to be installed in other project channels.

Water Control Structure No. 4: This type 1 structure will be located south of Cherry Hill Church No. 2. It will back shallow water to Highway No. 599 in Bonita. This additional water created will consist of 130 acres of new permanent water and an increase of depth by 2 feet of an additional 260 acres. The possibility of accomplishing the same effect by increasing the height of Structure No. 3 was investigated. This was not feasible since it would adversely affect land drainage above Structure No. 3. Construction of a new structure was the best alternative for this purpose.

The purpose of this structure is to mitigate loss of fishery and wildlife habitat caused by work on channels. A facility capable of water drawdown from the top of the pool will be installed for fishery management.

These mitigation features will provide more assurance of preserving the wetlands through project development since they are an integral part of the plan and will require land easements. They are not subject to change due to private ownership as is the case with the remaining wetlands.

Water Control Structure-Type 2 - About 16 of these structures (see Appendix D, figure 5) will be installed in the major channels as appurtenances. They will create 38 miles (115 acres) of ponded water in channels. The water held by these structures will mitigate fish damages and will also lower maintenance cost. This will be accomplished by:

1. Improving water quality by trapping sediment and the resulting chemicals which it transports.
2. Preventing vegetation from growing in the channel, thus reducing the need for chemical vegetative control.
3. Side slopes being more stable will cause less channel maintenance.
4. Providing a dependable source of drinking water for wildlife.

Wildlife Areas - The Morehouse Parish School Board administers approximately 1,430 acres of forest land in the watershed. This forest land is located in three tracts, two of 640 acres each and one of 150 acres (see Public Use Areas, Project Map, Appendix C). In certain locations on the two 640-acre sections, fairly dense stands will be cleared at random spacings to create 16 small openings, each approximately 1 acre in size. These cleared areas will be maintained as natural openings consisting of native vegetation. Openings of this type in forest land create an "edge effect" which is beneficial to nearly all wildlife species. To keep them in the weed and brush stage of plant succession, they will be disked or bushhogged about every 3 years. The increased carrying capacity occasioned by these wildlife openings will help mitigate the browsing areas which will be lost by channel improvement for flood prevention and drainage.

Wood Duck Nesting Boxes - The clearing in Bayou Bonne Idee will remove some trees with cavities which can be used by wood ducks for nesting. Approximately 310 boxes will be installed along the 31 miles of the bayou that has adequate brood cover. A Soil Conservation Service biologist will evaluate the use of these boxes. If this evaluation reveals that this number is insufficient, more will be added.

Construction sites for channel work will consist of narrow strips along the channels. These channel locations are sparsely located throughout the watershed area thereby dispersing construction activity away from any one concentrated area. This condition will keep noise and air pollution down to a minimum. Water pollution will be

minimized by the planned revegetation measures.

The disposing of all clearing waste and construction debris will be accomplished by burning, burying, or removal from the construction site. Specifically, material cleared from the designated areas will be disposed by one of the following methods:

- a. By piling and burning to a state of loose ashes. Debris which cannot be burned shall be buried as directed by the construction supervisor.
- b. By burying. When cleared material is permitted to be buried, it will be buried with the top of the debris approximately 2 feet below normal ground level and shall be covered by at least 2 feet of earth. Cleared material shall not be covered by spoil banks.
- c. By piling behind spoil banks when written permission is obtained from the landowner.

The clearing in the main channel of Bayou Bonne Idee will be accomplished by draining the existing water areas and using a "tree crusher" to push the tree down and bury the debris. This can be accomplished with little or no burning and be least damaging to the natural vegetation on the channel side slopes. Burying will also prevent the smoke pollution that burning would cause. The burning operation, if necessary, shall be conducted in accordance with the Louisiana Air Control Commission regulations and other applicable laws governing such operations. Noise levels will be monitored, and standards set by the Occupational Safety and Health Act will be followed.

A letter from the Curator of Anthropology at Louisiana State University dated October 8, 1971 indicates that nine archaeological sites exist in the watershed. Of these, only two are in close proximity to project channels. To the best knowledge presently available, these will not be disturbed. The other seven known sites of archaeological importance will not be endangered. The two known sites will be kept under close observation during construction.

Additionally, the Soil Conservation Service and Northeast Louisiana University have entered into a cooperative agreement whereby the University will furnish qualified archeologists who will make a survey of archaeological resources within the area committed to project installation. This survey is now underway and a report of the findings will be completed far in advance of detailed designs necessary for construction. Should the report indicate adverse effects to resources with archaeological or historical importance, appropriate action will be taken to salvage these, or to relocate or modify project measures prior to installation.

Nonstructural Project Measures

The Morehouse Parish School Board desires to make the 1,430 acres of forest land which it administers available for the enjoyment of the citizens of the parish and surrounding areas. These forested tracts have a high value as wildlife habitat because of the scarcity of hardwoods in the watershed and because the timber is old enough to produce mast. Hunting, hiking, tent camping, and bird watching will be the primary forms of recreation afforded by these areas.

Land Use Changes

Land use changes in the watershed from without project to with project conditions are expected to be as follows:

<u>LAND USE</u>	<u>PRESENT</u>		<u>FUTURE WITHOUT</u>		<u>FUTURE WITH</u>	
	<u>Acres</u>	<u>Percent</u>	<u>Acres</u>	<u>Percent</u>	<u>Acres</u>	<u>Percent</u>
Cropland	108,800	70	108,000	69	108,140	69
Grassland	16,000	10	16,000	10	16,000	10
Forest Land	16,400	10	16,400	10	16,234	10
Other ^{a/}	16,300	10	17,100	11	17,126	11
TOTAL	157,500	100	157,500	100	157,500	100

^{a/} Includes roads, channels, bayous, lakes, communities, farmsteads, rights-of-way, etc.

The preceding tabulation reflects only permanent land use changes from one category to another. For instance, 1,550 acres of trees and brush within the channel of Bayou Bonne Idee will be cleared. This is a permanent change but it is not shown in the tabulation because the bayou is in the "Other" land category before construction and will still be in it after construction. Some temporary disturbances will occur during construction. About 100 acres in small 1- to 2-acre plots will be needed for parking and servicing the construction equipment. These will be located in open land so that wildlife habitat will not be damaged. An additional 40 acres, most of which will be located in open land, will be required for trash or residue disposal caused by construction. About 30 acres will be disturbed during the construction of the water control structures on the bayou. These changes, except for the clearing in the bayou, are temporary. After construction (within 1 year), the land will revert back to its previous use.

The 110 acres required for the main recreation facility will be a permanent change in which 70 acres of cropland and 40 acres of forest land will change to the "Other" land category. The 40 acres of forest land will be selectively cleared of brush and small trees as necessary for installation of roads, camping spurs, and nature trails. Larger, more valuable trees will be left undisturbed. About 3 acres of land will be needed for the three boat launching areas. This is not a land use change since this land is already in the "Other" category.

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About 2,083 acres of land will be disturbed for the installation of Other Cannnel Work. Of the 2,083 acres, 1,500 are already in existing channel rights-of-way. About 295 acres of cropland, 193 acres of wooded channel bank and 95 acres of forest land not presently occupied by channels, berms, and spoil will be disturbed during construction. Of this 1,500 acres, 588 are occupied by existing spoil which will be spread along with the new spoil from construction. This means that spoil will occupy less land with the project than without the project. After the spreading of spoil in open land is accomplished, remaining spoil in the forest land and channels and berms will occupy 1,417 acres, 83 acres less than was originally taken up in channels, berms, and spoil.

Channel rights-of-way in open land will experience a setback in plant succession where natural vegetation is present. The only loss of habitat for open land wildlife species will be acreage taken up by channels.

Some game species such as squirrels and deer maintain higher populations on the type of habitat being removed in the forested channel rights-of-way than what will be present following the project. Other species such as quail and doves will be temporarily benefited by the conversion of forest land to open land habitat. This open land condition will revert to a brush stage after about 3 years, and its use as habitat by doves and quail will be virtually eliminated. Rabbit habitat in forest land will be as good or better following project installation as compared to existing conditions. The seeded and fertilized berms and spoil will be excellent food and cover for rabbits.

Operation and Maintenance

Operation and maintenance of all phases of the completed project will be the responsibility of the Sponsors. The Morehouse Soil and Water Conservation District, obtaining help from available sources and working with individual landowners and operators, will have the responsibility for maintaining land treatment measures. The Louisiana Forestry Commission, in cooperation with the U.S. Forest Service, will furnish the technical assistance necessary for maintaining the forest land treatment measures under the going Cooperative Forest Management Program and will continue to furnish fire protection for the watershed area. The Morehouse Soil and Water Conservation District, with technical assistance from the Soil Conservation Service, will assist and encourage landowners to install and maintain land treatment measures. The objectives will be to maintain adequate drains, ground cover, and other practices which will protect and conserve soil and water resources.

Operation and maintenance of all phases of the completed structural measures will be the responsibility of the Bonne Idee Gravity Drainage District. In addition to maintaining the structural measures proposed in the plan, the district will continue to maintain channels that are now adequate, as indicated on the Project Map, Appendix C. The methodical operation and maintenance of structural measures will insure proper functioning of these measures and realization of effects.

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The present district funds for drainage are considered adequate for maintaining channels and associated works. If these funds should prove inadequate, additional financing provided through normal funding procedures such as taxes or bond issues will be used. Annual expenses, including the replacement of worn out or obsolete parts as well as regular operation and maintenance, are estimated to be \$88,500. This includes \$26,800 for maintenance of the recreational facilities.

Channel maintenance includes such activities as periodic cleanouts necessary to restore channels to their planned capacities, patching of eroded areas or washouts on channel banks, control of aquatic weeds that would reduce channel capacities, and repair or replacement of side inlets and other structures. Maintenance of water control structures and grade stabilization structures include repairing rills around headwalls or wingwalls, maintaining or replacing vegetation of fills, repairing or replacing worn or broken parts, replacing short life parts and all other activities essential to the safety and functioning of the structure. The wildlife openings in the Public Use Areas (Wildlife Areas) will be disked and bushhogged every 3 years to keep them in the weed and brush stage of plant succession. Maintenance and improvement of the general attractiveness or beauty of the channel and structure sites shall be considered as important features of the maintenance program.

Operation of the water control structures-type 1 will be the responsibility of the Bonne Idee Gravity Drainage District. They will obtain assistance from the Louisiana Wild Life and Fisheries Commission on the technical aspects of managing the structures. Although the boy scouts will maintain the wood duck nesting boxes, the drainage district will also have the responsibility.

Existing public roads, farm roads, turn rows, trails, open areas, and other existing facilities will be used for maintenance equipment to reach the channels. If none are existing, travel ways will be provided. Sufficient access is available to properly maintain all channels. The channels will be kept clear of excessive vegetation by mowing, hand labor and use of approved herbicides. Herbicides will be used in areas where mowing and hand labor are not practical. Herbicides such as ammonium sulfamate, bromacil, and other registered with the Environmental Protection Agency (EPA) will be applied in a manner consistent with their labeling. Pesticides presently approved will not preclude the use of other EPA registered pesticides developed during the life of the project. Spraying will be accomplished in the low rainfall months when the ephemeral channels and most of the intermittent channels have no standing water. Spraying during these months will also lower the possibility of runoff carrying undegraded herbicides into other areas. Eroded banks, side inlets, and other appurtenances will be repaired when necessary. Sediment accumulations (mud bars) will be removed periodically by mechanical means.

Provisions will be made for representatives of the Soil Conservation Service, the Louisiana Department of Public Works, and the local Sponsors to have free access to all portions of the works of improvement at any reasonable time for the purpose of inspection, repair, and maintenance. The local Sponsors, together with representatives of the Soil Conservation Service, will make a joint inspection annually, after severe storms, and

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and after the occurrence of any other unusual condition that might adversely affect the structural measures. Regular inspection of the recreational development will be performed year round with emphasis during peak-use period.

Items which will be given special attention during these inspections are the three pit toilets at the access points (boat launching areas) and the flush toilets and septic tanks at the main recreational facility. Planned use of pit toilets is anticipated to be at a level which would not lead to accumulations of effluent in excess of that amount which the ambient soil can safely degrade. If use exceeds expectations and effluent accumulates in amounts which can not be safely degraded, pits will be periodically pumped and wastes disposed at a facility capable of safely processing it.

The septic tanks at the main facility will be operated and maintained according to the Louisiana Health Department and the U.S. Department of Health, Education, and Welfare. As necessary, tanks will be pumped and the wastes disposed in the same manner as that from the pit toilets.

These joint inspections will continue for 3 years following completion of installation of the structural measures. Inspection after the third year will be made by the Sponsors. They will prepare an annual report and send a copy to the Soil Conservation Service. Items of inspection include, but will not be limited to (1) conditions of vegetative cover and growth, (2) need for removal of sediment bars and debris accumulations, (3) need for brush control in channels, and (4) general conditions and need for repair of facilities in the recreational development.

The operation and maintenance cost of the recreational facilities represents items such as salaries for personnel, for custodial and policing at the main facility, and for sanitation and upkeep at the main facility and the boat ramps; contract services such as repair and sealing of paved areas and pumping septic tanks; and materials, equipment, and supplies such as fertilizer, seed, paint, fuel, parts, utilities, etc. Replacement of the recreational facilities and maintenance equipment whose life expectancies are shorter than the evaluation period are also calculated into the operation and maintenance cost. Items such as the picnic shelter, comfort stations, boat docks, barriers, and fencing are expected to need replacement about every 20 years. Other items such as tables, grills, garbage receptacles, and some maintenance equipment will need replacing about every 10 years. Other maintenance equipment will need replacing every 5 years. The recreational development will be operated and maintained in accordance with State and local health laws and regulations.

Financing of the recreational facilities will be partly accomplished through admission fees charged at the main facility by Water Control Structure No. 3. There will be no fees charged at the boat ramps located away from the main recreational facility. The admission fees will be limited to that needed to amortize the initial investment and to provide funds for adequate operations and maintenance.

The Sponsoring Local Organization fully understands its obligations for operation and maintenance and will execute a specific operation and

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maintenance agreement with the Soil Conservation Service prior to the execution of the project agreement for the installation of works of improvement. The project Sponsors will be responsible for providing the necessary ordinances required to protect the water quality in the bayou from effluent, sediment, and other contaminants that may result from buildup along the bayou banks.

Project Costs

The total installation cost of the project is estimated to be \$7,182,150 of which \$2,627,000 is for land treatment measures and \$4,554,350 is for structural measures. Of the total \$7,182,150, \$3,264,205 will be borne by Public Law 566 funds and \$3,917,945 by other funds. The total construction cost of structural measures is \$3,033,200 of which \$2,045,775 will be borne by Public Law 566 funds and \$987,425 by other funds. For further information on costs see Tables 1, 2, 2A, and 2B of the Bayou Bonne Idee Watershed Work Plan.

ENVIRONMENTAL SETTING

Physical Resources

The Bayou Bonne Idee Watershed, encompassing 157,500 acres, is located in northeast Louisiana in the eastern part of Morehouse Parish. The watershed is an elongated area bounded on the east and south by Boeuf River, on the west by Bayou Bartholomew and a meander line roughly paralleling Bayou Bonne Idee. The project area terminates on the north at the Louisiana-Arkansas state line. The entire population of the watershed is rural. Bonita, with a population of 533, the only village in the watershed, is located in the northwestern portion along U. S. Highway 165. Jones, a small community, is located 3 miles north of Bonita. Bastrop, a town of about 14,713 population and the parish seat of Morehouse Parish, and Mer Rouge, a small town of less than 1,000 population, are situated outside the project area about 10 miles and 3 miles, respectively, west of the southern tip of the watershed. Oak Grove, the parish seat of West Carroll Parish, is located about 14 miles to the east.

Bayou Bonne Idee Watershed^{1/} is located in the Ouachita River Basin of the Lower Mississippi Region.^{1/} It is fairly typical of other flatland watersheds in the alluvial valley of this region.

The watershed lies in the Southern Mississippi Valley Alluvium Land Resource Area. These soils were formed from braided stream and river meander belt deposits which are Recent Alluvium formations of the Quaternary System of the Cenozoic Era.^{2/}

The soil capability classification system groups soils with regard to their suitability for most kinds of farming. Such groupings are based on limitations of the soils, damage risk, and response to treatment. Class I soils have very few limitations, a wide range of agricultural uses, and the least risk of damage. Capability Class II soils have some limitations but not too severe. Capability Class III denotes soils with severe limitations that reduce the choice of plants and/or require special conservation practices. Capability Class IV soils have very severe limitations. The subclass designation "w" means that water in or on the soil is the primary limitation and "e" means that erosion is the main limitation.^{3/}

^{1/} U. S. Department of Agriculture, Soil Conservation Service, Atlas of River Basins of the United States (2nd ed.; Washington: U. S. Government Printing Office, 1970), map no. 15.

^{2/} Rufus J. LeBlanc, Geologic Map of Louisiana, a map compiled from several sources of data, Baton Rouge, Louisiana, 1948.

^{3/} U. S. Department of Agriculture, Soil Conservation Service, The Measure of Our Land, Pamphlet No. 128 (Washington: U. S. Government Printing Office, 1969), pp. 2-10.

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The principal soil associations are Perry-Portland, Hebert-Rilla-Sterlington, and Forestdale-Perry-Dexter. Perry-Portland, comprising approximately 42 percent of the area, is dominant. These soils are located on the low areas away from the natural levees mainly in the central and northeastern half of the watershed. They are moderately productive, nearly level, poorly drained, slowly permeable, and are difficult to manage because of the clay texture and excessive wetness. The soils in this association being used for agriculture are in Capability Class IIIw. Adequate drainage is necessary for them to be productive.

The Hebert-Rilla-Sterlington Association comprises approximately 40 percent of the area. These soils occur mainly on the level, gently sloping natural levee of Bayou Bonne Idee or other abandoned channels of the Arkansas River. The Class IIw and IIIw Hebert soils are somewhat poorly drained, and the Class I and IIe Rilla and Sterlington soils are moderately well drained to well drained. Soils in this association are easy to work and can be cultivated over a fairly wide range of moisture content. However, if worked when wet, clodding will occur. High yields are obtained under good management and fertilization. Adequate drainage is needed for the Hebert soils.

The Forestdale-Perry-Dexter Association comprises approximately 18 percent of the area. They occur on low terraces or areas away from natural levees. They are located in the southeastern quarter of the watershed. The Class IIIw Forestdale and Perry soils are poorly drained and require an extensive drainage system. The Class I and IIe Dexter soils, representing approximately 20 percent of the association and found on the small ridges, are well drained.

The topography is level to nearly level with slopes generally less than 1 percent. Elevations range from 85 feet above mean sea level in the southern portion to 110 feet above mean sea level in the northern portion.

The average annual rainfall is about 52 inches. Seasonal distribution is as follows: Winter - 31 percent; Spring - 28 percent; Summer - 22 percent; Fall - 19 percent. The average annual temperature is 65 degrees Fahrenheit.^{4/} The average monthly temperature in January and July is about 47 degrees and 82 degrees Fahrenheit, respectively.^{5/} The average frost-free period of 230 days extends from March 20 to November 5.^{6/}

^{4/} U. S. Department of Agriculture, Soil Conservation Service, Letter to the States about ENG - Hydrology - Directives - Chapter 21, National Engineering Handbook - Section 4 - Hydrology - Part I (South Regional Technical Service Center, Engineering and Watershed Planning Unit), September 16, 1965.

^{5/} U. S. Department of Agriculture, Forest Service, A Forest Atlas of the South (Southern Forest Experiment Section - New Orleans, Louisiana and Southeastern Forest Experiment Station - Asheville, North Carolina, 1969), pp. 22 and 23.

^{6/} U. S. Department of Agriculture, Climate and Man - 1941 Yearbook of Agriculture (Washington: U. S. Government Printing Office, 1941), pp. 900-901.

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There are three potential ground water aquifers in Morehouse Parish: the Sparta Sand, the Cockfield Formation of the Tertiary, and the Quaternary Alluvial deposits.^{7/} There are no known mineral deposits in the watershed.

The present land use and percent distribution are:

<u>Land Use</u>	<u>Acres</u>	<u>Percent</u>
Cropland	108,800	70
Grassland	16,000	10
Forest ^{a/}	16,400	10
Other ^{b/}	<u>16,300</u>	<u>10</u>
TOTAL	157,500	100

a/ Includes 3,370 acres of wildlife wetlands, Types 1 and 7.

b/ Includes roads, channels, bayous, lakes, communities, farmsteads, and 1,250 acres of wildlife wetlands, Types 3 and 5.

Large tracts of crop and pasture with a few relatively small interspersed forest land plots are located in the water problem area. This is typical of the whole watershed. The 16,400 acres of forest land is bottom land hardwood in an unmanaged condition. Most of the area has been repeatedly cut over with little regard for the future. The cutting practices have resulted in stands of poor quality.

Boeuf River is the drainage outlet. Water courses carrying water to this outlet are Bayou Bonne Idee, Camp Bayou Canal, Coffee Bayou, Cypress Bayou, and Turkey Bayou. Generally, these water courses drain south and then turn in an easterly direction to Boeuf River.

These principal channels and their laterals and other smaller channels were divided to form five evaluation units. Turkey Bayou (Channel M-2) and Channels M-3, M-4, M-5, and M-6 form Evaluation Unit I. Cypress Bayou (Channel M-7 system) forms Evaluation Unit II. Channel M-8, Coffee Bayou (Channel M-9), and Channel M-10 form Evaluation Unit III. Camp Bayou Canal (Channel M-11 system) forms Evaluation Unit IV. Bayou Bonne Idee (Channel M-1 system) forms Evaluation Unit V.

Bayou Bonne Idee is a high-bank stream located in an ancestral Arkansas River meander belt ridge.^{8/} Because of the geology of the area, the higher,

^{7/} J. R. Rollo, Ground Water in Louisiana, Water Resources Bulletin No. 1 (Baton Rouge: Department of Conservation, Louisiana Geological Survey, and Louisiana Department of Public Works, August 1960), pp. 27, 32, 42.

^{8/} Harold N. Fisk, Geological Investigation of the Alluvial Valley of the Lower Mississippi River, (A report conducted for the Mississippi River Commission, Vicksburg, Mississippi, by Harold N. Fisk, Ph.D., Associate Professor of Geology, Louisiana State University Consultant, 1944), p. 30.

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better-drained soils are usually located along the banks of old streams that at one time carried large volumes of water. The lower, poorly-drained soils are usually located away from these streams. The coarser, heavier particles of sediment were the first to settle when flows were overbank. This usually happened in close proximity to the stream. As the water flowed further back away from the stream, the velocity decreased and the finer particles settled. Bayou Bonne Idee's high banks and wide bed indicate that at one time it was a stream that had a much larger drainage area. Relatively recent diversion of water has increased the drainage area slightly. Several natural drains have been diverted into it. Such was the case with the land drained by Channels L-1D and L-1E and their laterals. Also, farm ditches have been cut against grade into the bayou in an effort to drain the land adjacent to the bayou. At the time this occurred, it was the most practical alternative, since most of the natural outlets were located in extensively forested areas. The area diverted into the bayou has increased the drainage area from about 36,000 acres to the present 45,800. The bayou's total length is 64 miles.

Prior to 1957, Bayou Bonne Idee did not have permanent water in any of its total 64-mile length and annually would become a dry stream bed during low rainfall months. Large cypress and other water tolerant species of trees, brush, and undesirable aquatic weed growth have grown in the bayou channel and greatly hampered the stream from becoming a high value fishery.

A water control structure was constructed in the bayou in 1957 which altered the stream's natural flow conditions. In 1959, the construction of another such structure further modified the stream. These two structures caused the impoundment of 45 miles of permanent water where it was previously an intermittent stream.

The other major channels are not high bank streams. These bayous, mainly Camp Bayou Canal, Cypress Bayou, Coffee Bayou, and Turkey Bayou, are either previously modified or manmade. Most of the work done on these channels occurred around 1950 or earlier. Since that time, large acreages of forest have been cleared and converted into cropland. The need for additional drainage has stimulated periodic enlargement and maintenance of the existing channels.

Stream classification shows that there are about 19 miles of Bayou Bonne Idee and about 21 miles of other channels which are classed as unmodified, well-defined natural streams. Of the remaining miles of channels, there are about 183 miles which are classed as manmade or previously modified and about 15 miles which are classed as nonexistent or practically undefined. Of the 223 miles of existing channels, 141 miles have ephemeral flows, 32 miles have intermittent flows, and 50 miles have ponded water. There are no perennial streams. The average annual temperature of water in channels is about 65 degrees Fahrenheit. The average sediment load in segments of Bayou Bonne Idee holding ponded water is about 300 mg/l. Average sediment in the 5 miles of ponded water in the other channels is about 1,200 mg/l. The water in the Bayou Bonne Idee is transparent and brownish in color. In some sections, such as above existing Water Control Structure No. 3, which is illustrated in the picture on page 26, vegetative infestation is not a major problem in these areas. The bayou has a

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Bayou Bonne Idee Above Existing Water Control Structure No. 3



Cypress Bayou Designated Channel M-7

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relatively high aesthetically pleasing appearance in these areas. The waters draining from and contained in the remaining drainage channels are generally murky, cloudy, and turbid. These channels generally have a low aesthetic value as typified by Cypress Bayou which is designated as Channel M-7 on the Project Map, Appendix C and illustrated in the picture on page 26.

The Louisiana Stream Control Commission has described portions of interstate streams, coastal waters, and streams discharging into coastal waters in the State according to present use. The Commission has also established quality standards which will apply to these streams and their intrastate navigable tributaries and water bodies. Boeuf River, which is illustrated by the pictures on page 28 is the only stream classified by the Commission which is applicable in this watershed. This river, the outlet for this watershed, is a medium sized, perennial stream. It originates in extreme southeast Arkansas, flows through the northeastern part of the State, and empties into the Ouachita River near Harrisonburg in east central Louisiana. Boeuf River has previously been modified. It carries a high sediment load and the water quality is poor because of turbid water conditions and lack of in-channel and bank cover. It does not contain a high fishery resource. No major sources of pollution discharges are known, but occasionally less than desirable levels of dissolved oxygen are noted. These seem to be due to heavy organic loads following periods of overflow.^{9/}

The Division of Water Pollution Control of the Louisiana Wild Life and Fisheries Commission has monitored water quality in Boeuf River since 1968. Water samples used in their tests were obtained monthly at the Louisiana Highway 15 crossing near Alto. This is approximately 20 miles below the watershed. Data collected is exhibited in the table on page 29.

One of the major problems affecting the Boeuf River aquatic ecosystem is excessive turbidities. Results of a study^{10/} on the effects of turbidity indicate that maximum production occurs where the average turbidity is less than 25 JTU's.^{11/} Between 25 and 100 JTU's, fish yield dropped 41.7 percent and where it exceeded 100 JTU's, the yield dropped 81.8 percent. Of the 72 monthly readings obtained on Boeuf River, 32 percent were less than 25 JTU's, 39 percent were between 25 and 100 JTU's, and 29 percent were over 100 JTU's.

The present uses of Boeuf River's water is for irrigation and watering of livestock, propagation of aquatic life, recreation, and carriage of minor amounts of treated municipal and industrial wastes. Anticipated future

^{9/} State of Louisiana, Stream Control Commission, Water Quality Criteria and Plan for Implementation (Unpublished report, 1968), p. 69.

^{10/} D. H. Buck, "Effects of Turbidity on Fish and Fishing," Twenty-first North American Wildlife Conference Transactions (Washington, D. C.: Wildlife Management Institute, 1956), p. 249.

^{11/} Jackson Turbidity Units.

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Boeuf River Above Louisiana Highway No. 2



Boeuf River Below Louisiana Highway No. 2

Mean, Maximum, and Minimum Values of Water Quality Data at Louisiana Highway 15 Crossing of Boeuf River 1968-73

WATER QUALITY DATA																
Year	Value	pH	Dis- solved Oxygen PPM	Satura- tion PERCENT	Temper- ature OC	Total Alkalin- ity PPM	Total Hardness PPM	Turbidity UNITS	Spec. Conduct- ance UMHOS/CM2	Sulfates PPM	True Color UNITS	Chlorides PPM	Sodium PPM	Dis- solved Solids PPM	Sus- pended Solids PPM	Total Solids PPM
1968	Mean	7.0	4.4	44	19	63	75	92	276	13	43	15	13	311	73	385
	Maximum Minimum	7.8 ^a 6.5 ^b	7.8 ^a 0 ^d	75 ^a 0 ^d	28 ^d 4 ^b	119 ^a 21 ^c	141 ^a 23 ^c	350 ^b 30 ^a	522 ^d 107 ^b	31 ^c 1 ^c	65 ^c 20 ^d	29 ^d 3 ^b	25 ^d 1 ^b	1332 ^d 62 ^b	366 ^b 8 ^a	1402 ^b 170 ^a
1969	Mean	7.1	5.3	53	16	92	99	60	341	21	37	30	18	209	59	268
	Maximum Minimum	8.2 ^a 6.2 ^b	8.0 ^b 2.6 ^b	74 ^b 23 ^b	24 ^d 10 ^b	173 ^a 31 ^b	220 ^a 13 ^d	100 ^c 30 ^a	570 ^a 190 ^c	32 ^a 7 ^c	80 ^c 20 ^a	61 ^a 11 ^c	37 ^a 10 ^b	354 ^a 96 ^c	166 ^b 0 ^a	354 ^a 172 ^c
1970	Mean	7.0	4.9	52	20	69	81	70	249	13	41	21	19	207	52	259
	Maximum Minimum	7.9 ^a 6.1 ^c	9.8 ^b 2.1 ^d	74 ^a 25 ^d	32 ^d 3 ^b	152 ^a 20 ^b	165 ^a 21 ^c	280 ^c 18 ^a	500 ^a 70 ^b	35 ^b 2 ^a	95 ^a 20 ^b	54 ^a 5 ^b	54 ^d 6 ^c	468 ^c 38 ^c	166 ^c 0 ^d	468 ^c 134 ^d
1971	Mean	7.5	5.0	51	18	91	107	68	262	22	47	32	16	208	62	270
	Maximum Minimum	7.9 ^a 6.9 ^d	7.3 ^b 1.8 ^c	65 ^a 19 ^c	29 ^a 8 ^b	202 ^a 32 ^c	230 ^a 36 ^c	190 ^b 4 ^a	580 ^a 90 ^c	31 ^a 3 ^a	80 ^d 15 ^b	90 ^a 7 ^b	36 ^b 9 ^d	414 ^b 50 ^a	206 ^d 6 ^a	434 ^b 56 ^a
1972	Mean	7.5	5.7	60	20	91	98	59	257	10	47	66	18	234	38	271
	Maximum Minimum	8.0 ^c 6.8 ^d	9.4 ^b 2.0 ^d	77 ^d 25 ^d	30 ^a 7 ^b	161 ^a 32 ^d	164 ^a 25 ^b	110 ^c 10 ^d	520 ^c 60 ^c	22 ^a 0 ^a	85 ^c 5 ^d	200 ^d 10 ^b	36 ^d 4 ^b	488 ^c 68 ^c	96 ^b 0 ^a	538 ^c 112 ^b
1973	Mean	7.3	5.3	52	19	62	70	82	160	8	59	15	7	177	35	212
	Maximum Minimum	8.7 ^c 6.0 ^b	12.4 ^b 0.2 ^d	95 ^b 2 ^d	29 ^d 4 ^b	138 ^a 15 ^d	141 ^d 35 ^b	160 ^b 5 ^d	330 ^d 60 ^c	25 ^d 1 ^d	100 ^b 10 ^a	42 ^d 4 ^c	23 ^d 0 ^c	316 ^c 10 ^b	94 ^c 2 ^d	360 ^b 46 ^b

Source: Unpublished Data, Louisiana Wild Life and Fisheries Commission, Division of Water Pollution Control.

a/ Value obtained during fall. b/ Value obtained during the winter. c/ Value obtained during the spring. d/ Value obtained during the summer.

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uses are municipal and industrial water supplies and considerable increase of most existing uses. General criteria for quality standards state: "No waste after discharge to the Boeuf River shall create conditions which will adversely affect public health or the use of its water for municipal and industrial supplies, propagation of aquatic life, recreation, agriculture, and other legitimate uses."^{12/}

Of the several small lakes in the area, Horseshoe Lake No. 1 and No. 2 are the largest having sizes of about 175 and 250 acres, respectively. Crane Lake, 15 acres in size, is the largest natural lake. Most of the other lakes or ponds are manmade. The next largest lake to the Horseshoes is a private lake of 60 acres. It is located near Bonita. There are about seven other small lakes ranging in size from 5 to 30 acres.

There are 4,620 acres of wetland types in the watershed as described in the U. S. Department of Interior Circular No. 39.^{13/} Descriptions and acreages of the different wetland types are listed in the Plant and Animal Resources section.

Plant and Animal Resources (Flora and Fauna)

As mentioned in the Physical Resources section, the main land uses are cropland (70 percent), grassland (10 percent), and forest land (10 percent). Cotton, soybeans, rice, grain sorghum, and other minor crops make up 15, 68, 9, 3, and 5 percent, respectively, of the cropland.

During noncropping seasons, fallow fields revert back to early stages of plant succession. Vegetation volunteering during these periods are ragweed, signalgrass, wooly croton, pokeweed, panic grasses, paspalums, asters, coneflower, hibiscus, daisy fleabane, morning glory, vervain, crabgrass, doveweed, and sparges.

Grasses grown for pasture include bermuda, bahia, fescue, dallis, carpet, and small grains such as rye, oats, and wheat. Vegetation on the forest land consists of overstory, understory, and transitional.

Overstory vegetation contains the dominant trees in the forest. These include water oak, willow oak, nuttall oak, hackberry, bald cypress, bitter pecan, sweet pecan, tupelo gum, sweetgum, box elder, sycamore, willow, locust, green ash, hickory, and elm.

Vegetation growing beneath the overstory is called understory. This consists primarily of reproduction from plants in the overstory and green-briar, blackberry, dewberry, palmetto, poison ivy, Japanese honeysuckle,

^{12/} State of Louisiana, Stream Control Commission, p. 68.

^{13/} U. S. Department of Interior, Fish and Wildlife Service, Wetlands of the United States, Circular No. 39 (Washington: U. S. Government Printing Office, 1956), pp. 20-22.

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sumac, haw, privet, buttonbush, switchcane, rattan vine, wild grape, trumpet creeper, Virginia creeper, ragweed, sumpweed, thistle, aster, and various grasses, ferns, and other forbs not listed previously.

Transitional vegetation consists of a mixture of the overstory and understory plants already listed. This condition is found on the borders where forest land and cropland or pastureland meet.

Of the two types of natural areas in the watershed, both are in the climax stage of plant succession. One type is the old brakes, portions of old stream beds, which contain cypress and tupelo gum trees. The other type is the forested areas which contain overstory, understory, and transitional vegetation.

Fisheries are of moderate value. Bayou Bonne Idee, Horseshoe Lake No. 1 and No. 2, Crane Lake, farm ponds, and unnamed small lakes are the major fisheries. Borrow pits dug for highway construction and stream cutoffs add some additional fishing outlets. The lakes and ponds total 680 surface acres. Standing crop values of 150 pounds of fish per acre are estimated for the lakes and ponds. One hundred and twenty pounds of fish per acre are estimated for Bayou Bonne Idee. Bayou Bonne Idee currently has 45 miles of permanent water with a total of 1,400 surface acres. The principal outlet, Boeuf River, is a medium sized, perennial stream originating in extreme southeast Arkansas and flowing through north-east Louisiana. The river empties into the Ouachita River near Harrisonburg in east central Louisiana. Boeuf River has previously been modified. It carries a high sediment load and the water is constantly turbid. Water quality is poor due to turbid water conditions and lack of channel and bank cover. It does not contain a high fishery. No major sources of pollution discharges are known, but occasionally less than desirable levels of dissolved oxygen are noted. These seem to be due to heavy organic loads following periods of overflow.

Water quality in the channels is also poor. Channels with ponded water and intermittent flows are currently turbid due to the intensively farmed drainage area and backwater from the Boeuf River.

For a description of fisheries by reaches of channels, the project area can be divided into two distinct areas; (1) Bayou Bonne Idee and associated aquatic environments, and (2) the remaining channels. The table on page 32 exhibits the lengths of channels with intermittent or ponded water. These channels can be located on the Project Map, Appendix C.

Of the channels, Bayou Bonne Idee contains the most significant fisheries. Important game and commercial fish species are bream, crappie, bass, shad, carp, gar, buffalo, and catfish. Bayou Bonne Idee contains a greater diversity of fish species (bass, crappies, bream, pickerel, carp, buffalo, shad, catfishes, bowfin, madtom, shiners, and minnows) than the other channels which have a preponderance of commercial fish species (carp, gar, shad, catfish). Water quality is higher in Bayou Bonne Idee compared to the other channels. The other channels contain only a minor portion of the total fish resources in the project since most are either ephemeral or intermittent.

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Location and Miles of Channels by Intermittent or Poned Flow Conditions

<u>Channel</u>	<u>Station to Station</u>		<u>Miles</u>	<u>Flow Conditions</u>
M-1	0+00	541+00	10.25	Intermittent
(Bayou Bonne Idee)	541+00	2890+00	44.49	Poned
	2890+00	3110+00	4.17	Intermittent
L-1B ^a /	0+00	71+00	1.34	Poned
L-1D	0+00	20+00	0.38	Poned
L-1E ^a /	0+00	18+00	0.34	Poned
L-1F ^a /	27+50	92+00	1.22	Poned
M-7 ^b /	30+34	494+00	8.78	Intermittent
M-11 ^c /	0+00	430+00	8.14	Intermittent
Subtotal - Poned			47.77	
Subtotal - Intermittent			31.34	

a/ These sections of channels do not require work.

b/ No work is required from Station 30+34 to Station 213+24.

c/ No work is required from Station 0+00 to Station 45+00.

Three 1-acre rotenone samples were taken in Bayou Bonne Idee above Water Control Structure No. 2 during July 1973.^{14/} Average standing crops were 182 pounds per acre. Game fishes composed 42 pounds or 27 percent of this total poundage. Samples in other sections of Bayou Bonne Idee were not taken due to lack of open water and the heavy infestation of aquatics. The area sampled represents the highest fisheries on the bayou.

See the tabulation on page 33 for a detailed summary of the sampling. Fish populations will be monitored over a period of years in this project and other projects in the State.

^{14/} Data developed jointly by the Soil Conservation Service, Louisiana Wild Life and Fisheries Commission, and the U. S. Fish and Wildlife Service.

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Bayou Bonje Idee - Three-Set Average
 Rotenone Data
 July 9, 1973 thru July 12, 1973

Species	Fish of Available Size			Intermediate			Fingerlings			% Total Pounds
	Min. Length	Number/Acre	Pounds/Acre	Range in Length	Number/Acre	Pounds/Acre	Max. Length	Number/Acre	Pounds/Acre	
<u>PREDATORY GAME FISH</u>										
Largemouth bass	9	5.3	10.3	5 - 8.9	1.3	0.16	4.9	16.6	.43	5.97
White crappie	7	2.0	2.06	5 - 6.9			4.9	349.0	1.2	1.78
Black crappie	7	3.6	2.3	5 - 6.9			4.9	8.6	.06	1.29
Chain pickerel	12			6 - 11.9			5.9	0.6	.03	T
Total		10.9	14.66		1.3	0.16		374.8	1.72	9.04
<u>NONPREDATORY GAME FISH</u>										
Bluegill	5	121.0	22.5	3 - 4.9	46.6	3.73	2.9	404	0.73	14.78
Redear sunfish	5	4.0	1	3 - 4.9	2.0	.1	2.9			.6
Spotted sunfish	5	1.0	.20	3 - 4.9	3.3	.16	2.9	4	.03	.21
Green sunfish	5			3 - 4.9	1.3	.1	2.9			T
Flier	5	.3	.06	3 - 4.9	1.3	.1	2.9	3	.1	.14
Warmouth	5	24.6	3.40	3 - 4.9	12.6	.5	2.9	90	.20	2.24
Total		150.9	27.16		67.1	4.69		501.0	1.06	17.97
<u>NONPREDATORY FOOD FISH</u>										
Carp	14	0.3	2.3	7 - 13.9	0.3	0.16	6.9			1.34
Smallmouth buffalo	16			5 - 15.9			4.9	0.3	T	.16
Lake chubsucker	10	.3	.4	5 - 9.9	32.0	5	4.9	25.6	0.3	3.12
Spotted sucker	12			5 - 11.9	2.0	.2	4.9			.12
Yellow bullhead	7	3.6	1.8	5 - 6.9	5.0	.3	4.9	3.3	.13	1.22
Black bullhead	7	.3	.5	5 - 6.9			4.9	.3	T	.27
Total		4.5	5.0		39.3	5.66		29.5	0.43	6.23
<u>PREDATORY FOOD FISH</u>										
Spotted gar	24	1.3	4.7	7 - 23.9	5.3	0.9	6.9			3.07
Bowfin	14	.3	2.0	5 - 13.9	1.3	.6	4.9			1.42
Total		1.6	6.7		6.6	1.50				4.49
<u>FORAGE FISH</u>										
Gizzard shad	8	80.6	28.2	4 - 7.9	527.0	4.80	3.9	53,000.0	78.6	61.2
Golden shiners	6	1.3	.3	4 - 7.9	5.6	.40	3.9	334.0	.4	.6
Miscellaneous minnows				4 - 5.9			3.9	321.0	.7	.38
Madtom				4 - 5.9			3.9	14.3	.2	.1
Total		81.9	28.5		532.6	5.20		53,669.3	79.90	62.28
GRAND TOTAL		249.8	82.02		646.9	17.21		54,574.6	83.11	

TOTAL POUNDS PER ACRE 182.34

T = trace weight

Source: Data developed through field studies conducted jointly by the Soil Conservation Service, Louisiana Wild Life and Fisheries Commission, and U.S. Fish and Wildlife Service.

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The fishing value and aesthetic value of Bayou Bonne Idee and Horse-shoe Lake No. 1 would be increased if debris, aquatic weeds, and excessive woody growth were removed and controlled. Additional enhancement would occur if trash dumping and domestic waste disposal were eliminated. Bayou Bonne Idee has a greater potential as a fishing area than what it is currently providing.

An area of about 390 acres located from the mouth of Bayou Bonne Idee to existing Water Control Structure No. 2, a distance of about 10 miles, currently has no permanent water. About 45 acres of this section of the bayou has intermittent flow characteristics with little fisheries. The primary fisheries occurs during periods of high flows when fish from Bayou Bonne Idee and Boeuf River are exchanged in this area. An estimated 70 pounds per acre exists in this reach in winter and spring during periods when water is flowing.

The area between Water Control Structure No. 2 to Water Control Structure No. 3, a reach of about 17 miles, contains approximately 670 acres of permanent water. This section of the bayou has an average standing crop of 182 pounds per acre.

Permanent water above Water Control Structure No. 3 totals about 28 miles or 730 acres. About 65 pounds of fish per acre are estimated to be the average standing crop value.

Fish populations in other existing drainage channels, typified in the pictures on page 35, are low to nonexistent. Rights-of-way of these channels contain woody growth of varying species, densities, and diameters. Willow is the dominant species in the channel proper. The majority of the channels are previously modified ditches.

Channels L-1B, L-1D, L-1E, and L-1F contain a total of 5 miles of ponded water. Channels M-7 and M-11 (Cypress Bayou, Camp Bayou Canal) contain a total of 18 miles of intermittent flow in addition to the 14 miles of Bayou Bonne Idee. Standing crop values of 75 pounds of fish per acre are estimated for the channels that have ponded water or intermittent flows. The majority of this poundage would be commercial fish species such as carp, shad, buffalo, and catfish. The low standing crop values result from turbid water conditions, shallow water, and lack of cover. The remaining 141 miles of channels have ephemeral flows (flows only during periods of surface runoff) with little fishery value. However, a limited production of fish food organisms such as crawfish and larval forms of various insects occur in these channels.

Public access availability to the existing fisheries is at road crossings and in some cases from the banks. Generally, landowners will grant people permission to fish if they are consulted beforehand. Movement and fishing on the main stem of Bayou Bonne Idee is hindered by aquatic weeds, brush, and trash in the water. Cleaning out logs, dense growths of woody vegetation, and aquatics in Bayou Bonne Idee would also improve boat access and use.

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Ponded Water in Channel



Intermittent Flow in Camp Bayou Canal Designated Channel M-11

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Access to Horseshoe Lake No. 1 and No. 2 is available through all-weather roads and boat launching ramps. Crane Lake and unnamed natural lakes have poor access due to lack of all-weather roads. Access to the other bayous is available primarily at road crossings.

Utilization of the existing fisheries by local residents is high. The sport fishery is utilized more than the commercial fishery. Sport fishing and the limited commercial fishing are important assets to the local economy through sales of boats, motors, and other fishing equipment.

There are basically three types of wildlife habitat; forest, open land, and wooded channel banks. Typical examples are illustrated in the following photographs on pages 37 and 38.

Forest land in the watershed totals 16,400 acres. Forest game species associated with this habitat are white-tailed deer, squirrels, rabbits, and waterfowl on the forested wetlands. Other species such as doves and quail use the edges for nesting and escape cover. The forest land is also potential wild turkey habitat. Nongame animals and birds also utilize the forests for food and cover requirements. Various species of mammals, amphibians, reptiles, and birds are found in the project area; however, it is beyond the scope of this report to list them all.

Following are some common species: raccoon, opossum, mink, skunk, armadillo, nutria, fox, various species of rats and mice, owls, swallows, belted kingfisher, blue jay, cardinal, brown thrasher, crow, woodpeckers, bluebird, Eastern meadowlark, herons, sparrows, hawks, water snakes, copperhead, king snake, Western cottonmouth, rat snake, coach whip, cane brake rattlesnake, garter snake, bullfrog, Fowler's toad, leopard frog, spring peeper, squirrel tree frog, Southern leopard frog, redeared turtle, three-toed boxturtle, softshell turtle, common snapping turtle, three-toed amphiuma, dusky salamander, five-lined skink, ground skink, Western slender glass lizard, and green anole.

Several threatened or status undetermined species could possibly occur in the area. In the threatened category are the Southern bald eagle and Backman's warbler; in the status undetermined category are the wood ibis and osprey. Threatened species are those who are on the verge of extinction. Status undetermined species have been suggested as endangered but not enough information is available on their numbers to determine their exact status.^{15/}

Presently, forest game populations are below carrying capacity of the habitat. Also, the habitat is below its potential because it occurs in small, scattered blocks and the highest quality mast trees have been removed. Populations of forest game species are kept low by the tremendous

^{15/} U. S. Department of Interior, Fish and Wildlife Service, Threatened Wildlife of the United States, Resource Publication 114 (Washington: U. S. Government Printing Office, 1973), pp. 5-203.

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Forest Land Habitat



Open Land Habitat

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Wooded Channel Bank



Wooded Channel Bank

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hunting pressure that is placed on the small amount of habitat remaining. Game animal populations are shown in the following table:

<u>Species</u>	<u>Estimated Total Animals^{a/}</u>
Dove (Migratory)	31,200
Quail	2,490
Squirrel	4,310
Deer	520
Rabbit	13,785
Waterfowl (Resident)	955
Waterfowl (Migratory)	9,548

^{a/} Data developed in cooperation with the Louisiana Wild Life and Fisheries Commission.

Clearing hardwood trees on large acreages and converting to cropland has proved detrimental to forest game species. An estimated 80,000 acres have been cleared in the project area since 1960 (see map, Appendix E). This caused an 83 percent reduction in forest game habitat. There are 16,400 acres of hardwoods remaining in the project area. These remaining trees lend to the aesthetics of the area. There are 1,120,000 acres of bottom land hardwoods within a 60-mile radius of the watershed. Clearing forest land has been beneficial to open land species such as doves and quail by creating more of their habitat type.

Open land, which includes cropland, fallow fields, and pastureland, furnishes primary habitat for doves, quail, and rabbits. Other game species utilize open land to a lesser extent. Current populations are below what this type is capable of supporting. This is due primarily to the practice of "clean farming". This situation occurs where the majority of grasses, forbes, and brush are removed from fence rows and other such places. Very little cover or food is left after the crops are harvested. As a result, open land game populations are moderate.

Low to moderate wood duck habitat currently exists from the mouth of Bayou Bonne Idee to the location of Water Control Structure No. 2 (existing). The bayou contains woody, understory vegetation and some overstory species. Vegetative cover in the channel proper ranges from 50 to 75 percent and contains buttonbush, willow, cypress, and tupelo gum.

From Water Control Structure No. 2 (existing) to Water Control Structure No. 3 (existing), limited wood duck habitat is currently available. The lower 14 miles are poor while the upper 3 miles are good wood duck habitat.

Above Water Control Structure No. 3, there are about 28 miles or 730 acres of permanent water surface. This entire length is good wood duck habitat.

A total of 4,620 acres of various wetlands occur in the project area. The description and acreages of the different wetland types are as follows:

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<u>Type</u>	<u>Description</u>	<u>Acreage</u>	<u>Percent</u>
1	Seasonally flooded bottom land hardwoods	1,700	37
3	Inland, shallow, fresh marshes (up to 6 inches of water)	290	6
5	Open lakes and ponds up to 10 feet deep	960	21
7	Cypress and tupelo gum brakes	<u>1,670</u>	<u>36</u>
	Total	4,620	100

The Project Map, Appendix C, shows those wetland areas that are over 80 acres in size. These wetland areas are the prime waterfowl habitat that is currently available. The majority of this acreage occurs in the western half of the project area. Within a 60-mile radius of the project area, there are about 140,000 acres of wetland or 32 times that which exists in the project area.

Fallow fields currently are furnishing some of the best open land habitat. The vegetative cover associated with these fields is beneficial during the early stages of plant succession. After 3 years, the quality of the habitat starts declining and continues to decline until the soil is disturbed again.

Small trees and shrubs which have grown up on spoil and channel banks also provide cover and nesting areas for wildlife which feed in the open land. This habitat is referred to as "wooded channel banks" in the plan. There are approximately 380 acres of this type habitat.

Numerous landowners plant fields of winter wheat, ryegrass, and oats for supplemental cattle grazing, grain, and soil protection. This practice is very beneficial to rabbits and deer, especially if the fields are adjacent to forested tracts.

Utility rights-of-way traversing forest land supply food and cover for various wildlife species such as deer, quail, and rabbits. In the forested tracts, these rights-of-way supply the "edge effect" which is beneficial to nearly all wildlife species.

Wetlands provide feeding, nesting, and roosting habitat for both resident and migratory waterfowl. Furbearers such as racoon, mink, bobcat, and fox also utilize wetlands for partial fulfillment of their habitat requirements.

Access to the existing wildlife resources is good. The Morehouse Parish School Board owns 1,430 acres of forest land. This property has all-weather roads for access. Some open land and forest land is posted; this limits public access. However, the majority of open land and forest land is accessible by all-weather roads and is open to the public for hunting by obtaining permission from the landowners.

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Economic Resources

There are three broad categories of industries in the economy of any region. First are the basic industries such as farming, mining, and forestry which are based on natural resources. Second are the processing industries such as cotton gins, grain elevators, petroleum refining plants, and lumber mills which depend on the basic industries. Third are the service industries such as wholesale and retail stores, communications, transportation, medicine, etc., which are based on the other two industries as well as its own members.^{16/}

The major basic industry in the watershed is farming. There are practically no forest resources remaining and there are no known mineral deposits in the watershed. However, other surrounding areas do have this type of employment and some watershed residents are employed in them. Using 1970 census data for Morehouse Parish, it was determined that 16 percent are employed in agriculture, 3 percent are employed in forestry and fisheries, and 1 percent are employed in mining. Manufacturing and construction employ 27 percent and 6 percent, respectively. The remaining 47 percent of the employed labor force work in the service industries.

In 1970, the watershed population was approximately 5,200, all of which were classified as rural. This was approximately 30 percent of the parish rural population and 16 percent of the total parish population. An estimated 75 percent of the watershed population live along the banks of Bayou Bonne Idee. Of the watershed work force consisting of approximately 29 percent of the watershed population, 7.3 percent are unemployed. The median family income was about \$5,270.^{17/}

The major farm and ranch enterprises are soybeans, cotton, rice, grain sorghum, and cattle. Farm-related industries include cotton gins, grain elevators, and agricultural flying services. Feed mills and pelletizing plants, tractor and equipment dealers, a cotton compress, and other agricultural-related industries are located in the nearby towns and cities.

Soybean acreage in the problem area amounted to approximately 66,500 acres in 1971. Most of these acres have been converted from forest land or pasture since 1960. Other important crops grown in the water problem area are 7,200 acres of rice, 7,900 acres of cotton, and 3,300 acres of grain sorghum. The "without project" yields are expected to be 18 bushels of soybeans, 750 pounds of lint cotton, 33 barrels of rice, and 33 hundred weights of grain sorghum per acre.

There are only 16,400 acres of forest land in the watershed. Because cutting practices continually removed the better trees, stands are now

^{16/} Gerald A. Doeksen, Robert E. Daugherty, and Charles H. Little, "Multiplier Effects of Agriculture and Other Industries," OSU Extension Facts (Stillwater: Oklahoma State University), Science Serving Agriculture No. 808, p. 808 and 808.1.

^{17/} The 1970 Census for Morehouse Parish.

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composed primarily of species of low quality. Stands will require management that favors the better species of higher quality if any merchantability is expected in the future. About 1,430 acres are owned by the Morehouse Parish School Board. There are eight other tracts ranging in size from one to three sections. The remainder is in small, privately-owned scattered tracts and borders along streams and swampy areas. Most of these areas would yield an average net return per acre of less than \$3.50. Only one tract of about 250 acres of school board land has fair quality, small sawtimber of about 2,000 to 3,000 board feet per acre.

While markets for pulpwood and sawtimber are active for the area, there is very little demand due to the low volumes and poor grades of timber. The sawtimber in this watershed brings only \$10 to \$30 per thousand board feet. Landowners in the area generally consider the expense of selling the timber too great for the return. Therefore, the remaining forest land is left as an incidental rather than a planned program. The timber stand would need protection and management for a considerable time before any future returns could be realized.

Using data from the 1969 Census of Agriculture, it was estimated that there were approximately 440 farms in the watershed averaging about 335 acres in size. Crop and pasture average about 290 acres per farm. An estimated 90 percent of the farms are family types distributed uniformly throughout the watershed.

Land values for agricultural purposes range from \$200 per acre for poorly-drained land to \$400 per acre for the better-drained land. These values depend on location, soil type, and degree of conservation measures applied.

Public land consists of 2,620 acres administered by the Morehouse Parish School Board of which approximately 1,190 acres are in cropland and 1,430 are in forest land.

The watershed is located within the Lower Mississippi Region Comprehensive Study Area. The work plan was coordinated with data furnished for this report.

There are approximately 200 miles of State and parish roads in the watershed. About 50 miles are hard-surfaced and 150 miles are graveled. Parts of some roads are under water after heavy rainfall; otherwise, farm-to-market and travel routes are adequate. The railroad providing service has loading facilities at several points.

Recreational Resources

A 1970 inventory conducted by the Louisiana State Parks and Recreation Commission lists 15 recreational sites for Morehouse Parish. According to the Bureau of Outdoor Recreation's land classes, 13 of these were recreation and 2 were natural environment. Three sites are located in the watershed. One consists of the Bonita Recreation Area having one baseball diamond and two tennis courts. The other two sites are boat ramps; one is

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located on Horseshoe Lake No. 1, and the other is located on Horseshoe Lake No. 2. Some bank fishing and limited boating occurs on Bayou Bonne Idee.

There are no known major pollution problems in the area. The pollution that does occur is mainly from sediment carried by runoff from cultivated land, trash dumping, and domestic waste disposal.

Public access to outdoor recreational facilities is good and use is moderate. Boat access to Bayou Bonne Idee is limited.

Archaeological and Historical Resources

The location of nine archaeological sites was obtained from the Curator of Anthropology of Louisiana State University. None of the sites were classified according to their nature. To enhance preservation of the sites, the Curator requested that their location not be published until further study. The Louisiana Historical Preservation and Cultural Commission was contacted. They identified no places of historical importance in the area. A check of the National Register of Historic Places also failed to reveal places of value.

Soil, Water, and Plant Management Status

Soybeans became a popular crop in the watershed in the early 1960's. Planted acreages in the problem and non-problem areas increased each year from about 15,000 in 1962 to about 78,000 acres in 1971. This increase has caused a reduction in forest land and pasture. Approximately 80,000 acres of forest land has been cleared since 1960. Much of the remaining 16,400 acres of forest land consists of relatively small scattered wood lots averaging less than 20 acres in size. There are several larger tracts ranging from one to three sections in size. All forest land is privately owned except for the 1,450 acres administered by Morehouse Parish School Board. Future changes in land use are expected to be small.

The watershed is in the Morehouse Soil and Water Conservation District. Soil and water conservation plans have been prepared for 333 operating units covering about 107,500 acres (about 68 percent of the watershed). An estimated 26 percent of the needed conservation measures have been applied. Land treatment has been applied to problem areas as well as non-problem areas. During the last 10 years, landowners have applied measures costing approximately \$632,500. Practices applied and costs are as follows:

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Measure	: Unit :	Applied To Date	Total Cost (Dollars) ^{a/}
<u>LAND TREATMENT</u>			
Recreation Developments	Number	5	15,000
Conservation Cropping System	Acres	4,400	4,400
Crop Residue Management	Acres	2,170	5,400
Farm Ponds	Number	4	1,000
Grade Stabilization Structure	Number	50	17,500
Drainage Land Grading	Acres	3,000	210,000
Drainage Main or Lateral	Feet	800,000	160,000
Wildlife Wetland Habitat Management	Acres	900	9,000
Pasture Hayland Planting	Acres	6,000	210,000
Tree Planting	Acres	7	200
<u>TOTAL</u>			<u>632,500</u>

a/ Price Base: 1973

Much of this was applied in areas where inadequate drainage is a problem.

The water bank program was introduced in Morehouse Parish in 1972. This program was created by the Water Bank Act whose purpose is "To provide for conserving surface waters; to preserve and improve habitat for migratory waterfowl and other wildlife resources; to reduce runoff, soil and wind erosion, and contribute to flood control; and for other purposes." Wetlands designated as eligible in Morehouse Parish are types 3, 4, and 5. Of the 1,250 acres of types 3 and 5 which exist in the watershed, 173 are enrolled in the program.

The Soil Conservation Service district conservationist works closely with the soil and water conservation district in establishing priorities of work to be done. They are actively involved in promoting good conservation. Through the use of a newsletter, radio announcements, and newspaper articles, the district announces important activities and publicizes results of these activities. They employ one technical aid and one part-time filing clerk to assist Soil Conservation Service field office personnel. As Sponsors of this watershed project, they are actively involved in planning.

The Louisiana Forestry Commission, in cooperation with the U.S. Forest Service through the various Federal-State cooperative forestry programs, is providing forest management assistance, marketing assistance, forest fire prevention and suppression, distribution of planting stock, and forest pest control assistance to private landowners. There are no lands administered by the U.S. Forest Service within the watershed. The watershed is protected from wildfire by the Louisiana Forestry Commission, whose 1971 fire loss index goal is 0.25 percent. The 1966-1970 burn record reports no fires for that period. The present level of protection is considered adequate to meet present and future hazards and risks.

WATER AND RELATED LAND RESOURCE PROBLEMS

Land and Water Management

Soils in the watershed have comparatively low erosion rates. Fertility is moderate to high but because of the generally flat terrain, high rainfall, and the medium to fine texture of the soils, a severe wetness problem exists. This problem has kept income at such a level that farmers have not been able to comprehensively treat their land. For instance, a farmer may have several low places on his land from which he is losing production. He cannot afford to eliminate these lows by land leveling because it is too costly a practice relative to his limited income. Instead, he tries to alleviate the problem by ditching. This may improve the production somewhat but it will not eliminate the problem completely. These ditches will remove the water from the small rains. However, they will not adequately remove the water from the large rains because the outlet channels are insufficient to remove the runoff in the required time. If problems were eliminated, farm income would increase and the farmer would more readily apply land treatment measures.

Floodwater Damages and Drainage Problems

The average annual rainfall is approximately 52 inches. Rainfall of at least 3.1 inches in a 48-hour period occurs on an average of two times a year, 4.2 inches once each year, and 5.9 inches once in 3 years. Generally, total damages caused by all small floods which occur annually are greater than the total damage resulting from larger but less frequent floods. Damaging out-of-bank flows in portions of the area occur about two times yearly. Peaks from the 3-year frequency storm on Boeuf River get high enough to back water into the low areas adjacent to it. However, Boeuf River peaks and tails off relatively fast. During the cropping season, the 3-day maximum stages resulting from the 5-year storm on Boeuf River would inundate less than 1,500 acres. Cropping season is defined as March 1 through November 15. This is the period of time in which good drainage and flood prevention is essential for normal crop production. Because there is so little elevation differential in the watershed, especially along Boeuf River, storms of a greater magnitude than the 5-year storm would cause more backwater flooding in Evaluation Units II and III than in Evaluation Unit I. Water backing into Channel M-11, the outlet for Evaluation Unit IV, would spill over in Evaluation Unit III further complicating the problem. Evaluation units are defined on page 24 and delineated on the Project Map, Appendix C.

Backwater flooding during the noncropping season is more intense. Damages are usually low since the areas flooded are not in crop production at this time.

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In this watershed, there is no defined flood plain. Flooding and drainage problems are inseparable in most areas. Frequent out-of-bank flows cause farm operators to delay planting or cause replanting and use of additional cultural practices in production and additional equipment and labor in harvesting. The quality and quantity of cotton, soybean, grain sorghum, and rice are adversely affected when normal harvesting is delayed.

Land use changes from noncropland to cropland have occurred rapidly. An estimated 80,000 acres of forest have been cleared and gone into crop production since 1960. During this same period, approximately 10,000 acres of pasture have also gone into crop production. The drainage systems on these lands are inadequate for efficient crop production. The increased runoff from this land overtaxes previously worked channels and causes problems on other lands.

Soybean lands best illustrate the severity of the problem since it represents the largest acreage and suffers the most damages. The driest months are October, September, August, and June, in that order. Rainfall is highest in winter and lowest in late summer and early fall. Relatively little land preparation can be accomplished in early spring because of the flooding and wetness problems. Consequently, much of the crop is not planted until the end of May or the beginning of June and often as late as the first of July. Since June is one of the drier months, much difficulty is encountered in establishing a good stand. The low moisture content of the soil prevents germination and allows a black mold to form around the seed causing it to rot.

The root system of these late soybeans is not as extensively developed as the earlier beans. Therefore, their growth is affected more by lack of moisture in the dry months of August, September, and October than they would have been if they had been planted early. These late soybeans are not ready for harvest until late October, November, or early December. The sum of the average rainfall for November and December exceeds the sum of the average rainfall for August, September, and October by 20 percent. Thus, much of the harvest is delayed or performed under highly unfavorable conditions. Almost every year, some crops are not harvested because of the wet condition of the soil.

The delays, because of wetness, cause the beans to mildew in the pod and retain more moisture than is desirable. The longer harvest is delayed, the greater the loss from pods shattering. When the ground is wet, the cutter bar of the harvester cannot be lowered as close to the ground as is desirable because the machine sinks and bogs. Therefore, soybeans are left in the field that would have been harvested had a better drainage condition existed. The harvested beans have to be hauled from the combine to the truck by tractor and grain cart instead of the combine emptying directly into the truck. Harvesting a given acreage requires about twice as much time under these adverse conditions.

A research report entitled The Effects of Production Practices on Soybean Yields, Costs and Returns in the Mississippi River Delta of Louisiana, published by the Department of Agricultural Economics and

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Agribusiness of Louisiana State University, describes the problem in more quantified terms. One of the key points made in this report is that there seemed to be a direct relationship between planting dates and soil type, surface and subsurface drainage, and land forming and yield per acre. Low-yield producers, with less favorable soil types, drainage, and land forming practices, planted a greater percentage of soybeans at a later date than high-yield producers, probably to a great extent, out of necessity. The following tabulation is a summary of production practices considered in the study.

A Percentage Comparison of Production Practices for Soybeans by Yield Groups, Mississippi River Delta Area, Louisiana, 1970

Item	Unit	Yield Group		
		Low	Medium	High
Average number of acres planted	acres	597.4	815.4	636.6
Heavy soil type	percent	78.1	70.2	50.5
Very good surface drainage	percent	6.7	9.6	25.7
Very good subsurface drainage	percent	0	4.8	3.7
Land forming practices	percent	7.6	15.4	29.3
Liming	percent	12.4	34.6	22.9
Fall plowing	percent	72.4	73.1	91.8
Deep tillage	percent	48.6	55.8	64.2
Planting on a bed	percent	38.1	51.0	50.5
Planting on 40-inch rows	percent	50.5	37.5	57.8
Completed planting by May 21	percent	59.4	86.5	85.3
Double-disc opener planter	percent	51.4	38.5	46.8
Sword-type planter	percent	48.6	61.5	53.2
Use of preemergence herbicides	percent	74.3	81.7	80.7
Four cultivations	percent	27.6	41.3	31.2
Use of postemergence herbicides	percent	40.0	43.3	41.3
Hand hoeing	percent	32.4	50.0	57.8
Flame cultivation	percent	3.8	7.7	4.6
Use of lay-by herbicides	percent	10.5	13.5	5.5
Complete weed control program	percent	9.5	17.3	21.1
Fields free of weeds	percent	25.7	37.5	59.6
Use of insecticides	percent	33.3	39.4	22.0
Average or better weather conditions	percent	10.5	37.2	53.2

Several important implications from the summary of the study are as follows:

1. that the number of acres of soybeans produced was not a factor limiting the yield of soybeans for any one group;

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2. that low-yield producers can increase average yields and returns through increased crop rotation programs, whenever possible, primarily by helping control weed infestation;
3. that low-yield producers can increase yields and returns through more intensive drainage and land forming practices;
4. that low-yield producers with careful variety selection based on soil type, date of planting, maturity dates, and specific soil physical characteristics can increase yields and incomes;
5. that low-yield producers can generally increase yields by planting approximately 1 bushel of certified, high quality seed per acre before May 31 and that early maturing varieties (Hill, Dare, and Hood) suffer more from later planting dates than medium and late maturing varieties (Davis, Bragg, Lee, and Lee 68);
6. that low-yield producers can increase yields and returns by a more complete weed control program (both chemical and conventional) where weed and grass infestation is a problem and;
7. that low-yield producers can lower costs of production for soybeans by the use of six-row equipment over four-row equipment with at least 600 to 800 acres and with careful consideration of the age of present four-row equipment, timeliness of operations, labor availability, etcetera, before changing to six-row equipment.

Other crops in the problem areas are affected similarly. Farmers are faced with an annual cycle of uneconomic conditions. They are forced to plant late because they cannot get the seedbed prepared early enough. Because of this, they have to harvest late. The late harvest is excessively costly and produces lower quality products. Instead of leaving crop residues on the ground or planting cover crops to protect the soil from the high intensity winter rains, farmers attempt to fall or winter plow. This early plowing speeds up seedbed preparation in the spring or early summer when time is so critical. If good drainage was provided, the farmers would be more apt to maintain a good soil cover in winter because they would have more time for seedbed preparation in the spring.

Roads require additional maintenance because of flooding. Extra gravel, fill material, equipment, time, and labor are needed to keep roads open and passable. When roads are flooded, sections of schoolbus routes have to be omitted. Children then either miss school or have to be transported to the nonflooded roads by tractor. In instances where the assistance of a doctor would be required, a flooded road or non-flooded road may mean the difference between life and death.

Average annual floodwater damages amount to \$492,200. Of this amount, \$434,600 are crop and pasture damages, \$27,700 road and bridge damages, \$25,000 sediment damages, and \$4,900 indirect damages.

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Erosion Damage

Sheet erosion is the major form of erosion within the watershed. While other forms of erosion such as gully, streambank, roadside, etc., are present, they are relatively insignificant. The problem of sheet erosion can best be discussed by dividing the watershed into two areas: Evaluation Unit V consisting of the Bayou Bonne Idee system and Evaluation Units I, II, III, and IV consisting of the remainder of the watershed.

Most of the soils of the Hebert-Rilla-Sterlington Association are located in Evaluation Unit V. These soils range from a very fine sandy loam to a silt loam, (80 to 100 percent of material passes a No. 200 sieve), with solum thickness ranging from 36 to 72 inches. These natural levee soils were created by the old Arkansas River of which Bayou Bonne Idee is an old remnant. The surface layer of these soil profiles are strongly acid. The slope is approximately 1 percent and the slope length is approximately 300 feet.^{1/} The adjusted erosion rate, without regard to cover nor to land treatment measures, amounts to approximately 6.4 tons per acre per year.

Evaluation Units I, II, III, and IV essentially consist of soils of the Perry-Portland Association. About 95 to 100 percent of this material will pass a No. 200 sieve. The average slope is approximately 0.5 percent and the slope length averages approximately 100 feet. These soils are silty clays to clays with the Perry Series being montmorillonitic. Thickness of the solum ranges from 30 to 60 inches. These are "backswamp" soils formed along the Arkansas River. The upper portion of these soils are frequently highly acid.^{2/} The adjusted annual erosion rate, without regard to cover or to land treatment measures, amounts to approximately 2.5 tons per acre.

Due to the low relief of the land and the erosive resistance of the soils, the annual sheet erosion at the present time amounts to approximately 3 tons per acre across the entire watershed. This is a very small soil loss. It is equivalent to a surface degradation of .0012 feet of soil. Not all of this soil is "loss" but simply transported from one area in the watershed to another.

Some erosion is present where field ditches intercept lateral and main ditches. Sloughing of side slopes on some channels is present in the watershed. While these are a noticeable form of erosion, they are small compared to the sheet erosion.

^{1/} U.S. Department of Agriculture, Soil Conservation Service, National Cooperative Soil Survey, Soil Survey Interpretations (Fort Worth, Texas, Cartographic Unit--South Regional Technical Service Center; Hebert Series, Rilla Series, and Sterlington Series.

^{2/} Ibid., Perry Series and Portland Series.

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Sediment Damage

Sediment damage on agricultural land in the watershed is minor and swamping is not identifiable. Due to the fine grain size of the sediment, most of it remains in colloidal suspension and does not create a major problem in channel maintenance. Some maintenance, of course, is necessary. Sediment bars develop where ditches juncture and where vegetation or debris intercept the velocity in the channel. While some of this sediment is due to a decrease in velocity, some is due to chemical changes and local concentrations.

Sediment from this watershed is deposited in Boeuf River on which the U.S. Corps of Engineers have done work. At the present time, Boeuf River receives an average annual suspended sediment load of approximately 1,200 ppm from the Bayou Bonne Idee Watershed exclusive of the Bayou Bonne Idee system. The Bayou Bonne Idee system has an average annual rate of about 2,900 ppm. It is to be noted that these suspended sediment rates are average annual rates. During or after heavy rains, the sediment concentration will be many times greater. During low flow periods, the concentration will be much less. Since the Bayou Bonne Idee Watershed is only about 20 percent of the drainage area of Boeuf River, these amounts of sediment are minor when compared to the total load carried by Boeuf River.

Sediment removal from the river is a problem. The cost of removing that portion deposited from this watershed is estimated to be \$25,000 annually.

Irrigation Problems

Rice is the only crop which is being irrigated regularly. About 25 percent of the acreage is irrigated with water from Boeuf River and Bayou Bonne Idee. The remainder is irrigated with water from wells. Some farmers have installed wells to irrigate other crops such as cotton and soybeans, but their use is not regular.

An average of about 2.5 inches of rainfall per month occurs during the droughty months. The uncertainty of the time that this rainfall occurs has played a major role in keeping irrigation at its low level. By chance, it seems that most farmers with an irrigation system have experienced going through the expense of setting up their equipment just prior to a rain. Often they may have just completed an irrigation when the rain comes. In areas where inadequate drainage is evident, irrigation may have caused more harm than good. Consequently, they often delay irrigating in anticipation of rain in the near future. This situation has kept the profitability of irrigating crops other than rice on a marginal basis. An estimated 10 percent of the cropland is irrigated.

Of the three potential ground water aquifers, the Quaternary Alluvial deposits are the most likely suitable source of any future water. Because

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of its shallow depth, irrigation wells in this formation cause a large drawdown cone that interferes with smaller wells in the vicinity.

Water from the Cockfield Formation ranges from soft to very hard with excessive iron content. The water is suitable for irrigation. The difficulty with obtaining irrigation water from the Cockfield is its relatively small specific yield. Water from the other formation, the Sparta Sand has too high a concentration of dissolved sodium salts to be suitable for irrigation.

The flat clayey soils of the Perry-Portland Association are especially suitable for the surface-type irrigation used in rice culture. Soils of the Forestdale-Perry-Dexter Association are less suited to this type irrigation because of small localized ridges. Sprinkler-type irrigation has been tried on these soils with limited success. Land forming would make this soil suitable for surface irrigation. The sandier soils along the natural levee of Bayou Bonne Idee, the Hebert-Sterlington-Rilla Association, are well-suited for furrow-type irrigation since the land slopes uniformly away from the Bayou. In some locations, landforming may be required in this type soil, also.

Municipal and Industrial Problems

The same three aquifers serving as a source of irrigation water would also serve as a source for municipal and industrial water if a greater need arose. The only village in the watershed, Bonita, gets its water supply from the Cockfield Formation. At the present time, this source is adequate although high in minerals. Population projections show a decrease of about 14 percent for Morehouse Parish from 1970 to 1985. Since the watershed is all rural, the decrease in it will probably be greater than 14 percent. Present sources should be adequate for future demands unless irrigation use rises sharply.

Recreation Problems

The 1970 population, within a 50-mile radius of the watershed which includes the Monroe Metropolitan Area was estimated to be 290,000. By the year 2020, it is expected to be 380,000, representing a 31-percent increase in the 50-year period. The recreational demand based on the present population is 715 tent camping sites, 1,100 trailer camping sites, 1,390 picnicking sites, and 290 boating ramps. After subtracting the present supply from total demand, there remains a need for 598 tent camping sites, 1,010 trailer camping sites, 1,070 picnicking sites, and 247 boating ramps.^{3/} Many new facilities will have to be installed before even the present demand can be met.

Most of the land within the 50-mile radius is flat and the area is poor in the quantity of water available for fishing and water sports. Bussey Brake, Horseshoe Lake No. 1, and Horseshoe Lake No. 2, surface

^{3/} Based on State Comprehensive Outdoor Recreation Plan for 1970-1975.

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area 1,800 acres, 150 acres, and 240 acres, respectively, are the only lakes within the area of influence. D'Arbonne Lake and several cutoffs on the Mississippi River are on the outer periphery of the 50 miles.

Local interest in developing new recreational areas is high. The local people recognize the present shortage of facilities and realize that if potential areas are not developed this shortage will become more critical in the future.

Plant and Animal Resource Problems

Lack of high quality fishing waters and recent land use changes are two of the major problems concerning fish and wildlife. The major portions of Bayou Bonne Idee which hold permanent water have a low usefulness as a fishery. The reason for this is that they are heavily infested with aquatic weeds, trees, brush, and trash as illustrated in the pictures on page 53. The predominant aquatic weeds are duckweeds and water hyacinth. Cleaning these portions of the Bayou and creating permanent water in the intermittent portions would greatly enhance the fisheries of the watershed.

The clearing of large acreages of hardwoods in recent years has reduced populations of deer, squirrels, and swamp rabbits. Approximately 16,400 acres of forest are left. (See Appendix E for location.) Although of low quality for timber production, these hardwoods hold the key to future populations of forest game.

Lack of cover in the cultivated areas, especially where fall or winter plowing occurs, is a problem for quail production. Protective and nesting cover is void on the majority of this acreage.

The current practice of fall or winter disking of large acreages of harvested beans and cotton land is detrimental to fish and wildlife. It adds to the sediment load in the streams and destroys wildlife cover. Planting more winter cover crops or leaving the crop residues would benefit fish and wildlife resources.

Economic and Social Problems

The level of income, necessary for surviving on a minimum diet with none of the amenities of prosperity has been determined by the Social Security Administration.^{4/} An individual is considered poor if his personal income or the income of the family to which he belongs inadequately provides for his subsistence. In 1960, by this definition, 46 percent of all the families in Morehouse Parish were classified as

^{4/} James R. Robo and Dean R. Dudley, Statistical Abstract of Louisiana (4th ed.; New Orleans: Division of Business and Economic Research, College of Business Administration, Louisiana State University at New Orleans, 1971), p. 172.



A Portion of Bayou Bonne Idee Infested with Aquatic Weed



A Portion of Bayou Bonne Idee Infested with Woody Vegetation

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poor; 14.5 percent were white and 31.5 percent were nonwhite. In 1966, 35.2 percent were classified as poor. This was an improvement of approximately 11 percent since 1960. However, 84 percent of all the counties in the United States still had a smaller proportion of poor families. One percent of the families in the State of Louisiana live in Morehouse Parish. However, 1.2 percent of all the poor families in the State reside in this parish. It has a greater than proportionate share of poor families.

According to the 1970 census for Morehouse Parish, there were 7,804 families with a median income of \$5,708. Of the total families, 3,656 were urban with a median income of \$6,278; 3,605 were rural nonfarm with a median income of \$5,539; and 543 were rural farm with a median income of \$3,494. About 30 percent of the urban families had incomes less than the poverty level while 34 percent of the rural nonfarm and 46 percent of rural farm families had incomes less than the poverty level.

The parish economic conditions are below the State average. For example, 11 percent of the families in the parish have a female as the head of the household compared with 8.6 percent in the State. Compared with State averages, Morehouse Parish has 28 percent more females as heads of household with family members under 18 years; 22 percent more primary individuals which are 65 years of age and over; 35 percent more occupied households which average 1.51 or more persons per room; and 125 percent more occupied households lacking complete plumbing facilities.

Old age assistance and aid to dependent children are the two largest recipient groups of welfare aid in Morehouse Parish. Of the total public welfare assistance grants made in fiscal year 1966-67, 63 percent was for old age assistance, 26 percent was for aid to dependent children, 8 percent was for disability assistance, 2 percent was for general assistance, and 1 percent was for aid to needy blind. About 45 percent of the parish population was under 18 years old and 8 percent was 65 years old and over. Since 2,079 children received welfare assistance that year, this represented 14 percent of the population under 18 years of age.

Information from the 1970 census reveals that 4.4 percent of the people 25 years of age and older had never completed 1 year of school; 31.5 percent were high school graduates. The median for years of school completed was 9.

Since the watershed has a larger percentage of poor families than the parish, it is reasonable to believe that its economic and social conditions would be lower than the preceding figures show.

According to 1969 Census of Agriculture data, there are 726 farms in Morehouse Parish. This was a decrease of about 28 percent in number of farms from 1964 to 1969. The average size of farms was 370 acres in 1969, as compared to 203 acres in 1964. In 1969, 31 percent of the farms were less than 50 acres and 49 percent were less than 100 acres. Farm operations in the watershed are continually decreasing in number

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and increasing in size. Due to the increasing cost of production inputs and the relatively static prices of agricultural products over the past 20 years, farmers are faced with a "cost-price" squeeze. Decreased net returns per acre resulting from this situation have caused the small operators to either leave the farm, expand their enterprises into economic size units, or seek employment elsewhere using farm returns as supplementary income. From 1950 to 1970, the number of farm operators has decreased by approximately 75 percent and size of farms has increased by approximately 500 percent. Many of the small farmers have either sold or rented their land. The majority of the remaining small farmers are employed off the farm and are not primarily dependent on the farm for their livelihood. According to the 1969 Census of Agriculture data, about 41 percent of the farms in the parish had sales of less than \$2,500, about 58 percent had sales less than \$5,000, and about 68 percent had sales less than \$10,000.

Projections show that the trend of decreasing number of farms and increasing size will continue in the future. Farmers are trying to raise their income and, consequently, are compensating for low net returns per acre by farming more acres. In order to accomplish this, they have to use larger, more expensive labor-saving equipment.

Although the population of Morehouse Parish only decreased by 1,246 persons from 1960 to 1970, it had a net out-migration of 6,586 persons. This was a 16.9 percent decrease in the expected 1970 population. The expected 1970 population was calculated by adding births from 1960 to 1970 to the 1960 population and then subtracting deaths which occurred during the same time period. Of the total net out-migration, 83 percent were nonwhite and 17 percent were white. Many of the young adults are leaving the farm to seek employment elsewhere. Increased efficiency of remaining labor through greater mechanization is necessary for survival of the farm family.

It is estimated that only 10 percent of the farms use 1 1/2 man-years or more of hired labor. These farms are scattered throughout the watershed and are not confined specifically to any area.

Other Problems

Water for human consumption is obtained from wells. Livestock water is from bayous, channels, stock ponds, and wells. These sources are adequate, except for the shallow wells which are sometimes affected by the drawdown caused by irrigation wells.

ENVIRONMENTAL IMPACTS

Conservation Land Treatment

The installation of land treatment measures will improve soil cover and improve drainage. Installation of conservation cropping systems, crop residue use, grade stabilization structures, pasture and hayland planting and management, and forestry management will reduce erosion.

The installation of practices such as drainage land grading and drainage mains and laterals will help alleviate the wetness problems in the watershed. The efforts of these land treatment practices and the structural measures are inseparable and are, therefore, discussed in the following flood prevention and drainage section of Structural Measures discussion.

The reduction in erosion will also decrease the resulting sedimentation and turbidity. Future sheet erosion over the entire watershed will be reduced from 3.0 tons per acre per year without the project to 2.2 tons per acre per year under future conditions with the project completed. This reduction in sheet erosion due to land treatment measures will result in an 18 percent reduction in sediment.

In Evaluation Units I, II, III, and IV, the future without project sediment delivered to Boeuf River will be reduced by approximately 4,000 tons per year after project installation. This will be an 18 percent reduction in sediment yields to Boeuf River. The soils in this portion of the watershed are primarily Perry Clay. This soil has a very fine-grained texture. This type material, when eroded, results in a high percentage of suspended matter causing high intensity of turbidity. With the installation of planned project measures, the average annual suspended sediment will be reduced from about 1,200 ppm to 1,000 ppm.

In Evaluation Unit V, which contains Bayou Bonne Idee, there are approximately 25,000 tons of sediment per year now being delivered to the Boeuf River via the Bayou Bonne Idee Channel. This rate will increase to 26,000 tons for future without project conditions. The 26,000 tons per year yield will be reduced to 11,000 tons per year after installation of project measures. Of the 15,000 tons per year reduction, about 11,000 tons per year is directly attributable to the two additional water control structures planned, and 4,000 tons per year is attributable to land treatment measures. The estimated average annual sediment will be reduced from about 2,900 ppm to approximately 1,300 ppm. This is a reduction of 58 percent from the future without project conditions.

The U.S. Corps of Engineers has an authorized project on the Boeuf River. The reduction in sediment delivered to the Boeuf River as a result of watershed planned structural measures will, in turn,

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reduce the maintenance required on the Boeuf River. This will reduce the frequency of maintenance and subsequent increase in turbidity resulting from maintenance excavation. The net effect is improved quality of water in Boeuf River.

Improved soil conditions produced under proper forest management and protection will increase infiltration rates and water storage capacity. Watershed needs and objectives will receive primary consideration in the forest management and land treatment program.

The management plans for the remainder of the forest land will help improve the stands and increase productivity and economic returns from the land. Forest lands will be managed to fulfill timber, wildlife and recreation needs to the extent that such management is compatible with sound watershed management.

The utilization of proper forest management practices on 250 acres of forest land under the land treatment program will increase its wildlife carrying capacity by about 10 percent. Periodic timber thinnings will open up the canopy, permitting more sunlight to reach the forest floor. This stimulates the production of browse for wildlife and increases mast production.

It is estimated that farmers will increase their use of chemical fertilizers by 2,200 tons annually. This amount will be less if research presently being conducted proves successful. This research deals with the time release of nutrients such as nitrogen which do not remain in the soil for long periods of time. Soil fertility will decline without further use of fertilizers. Fertilizers now account for approximately one-third of the Nation's total food supply and their increased use will probably be necessary to attain the higher yields of the future. Nitrogen and phosphorus are the mineral elements usually limiting green plant growth. Studies indicate that with good management, the amount of nutrients entering water from fertilizers is low. Phosphate is the ion that usually controls aquatic plant growth. Most soils have a strong "fixing" capacity for phosphorus. Leaching of phosphates is slight. Most of the loss to streams and lakes is through erosion. Data on sources of phosphates in water is difficult to obtain, but there is evidence that the principal sources generally are detergents, municipal sewage, and sediment.^{1/}

Since the majority of the soils in the watershed are clayey, leaching is not a large problem. Where adequate amounts of nitrogen are applied at the proper time, most of the nitrate is absorbed by the growing crop. For these two reasons little, if any, nitrates

^{1/}George E. Smith, "Water Pollution from Agriculture," Missouri's All Employee Training Conference - Framework for the Future (Columbia: U.S. Department of Agriculture, Soil Conservation Service 1972), pp. 46-48.

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are lost from the watershed. Leaching may be rapid in sandy soils but is slowed as the clay content increases.

The best control methods for preventing fertilizer nutrients from entering water supplies are to apply only the amount needed at the proper time and to use management practices that will reduce erosion to a minimum. Potash is not considered to be significant enough to be a pollutant.

The application of land treatment measures will tend to reduce the amounts of fertilizer delivered to the lakes and bayous. This decrease in the eutrophication process will be offset by the increased use of fertilizers unless new technology is introduced. The rate of eutrophication in the watershed will decrease or remain about the same depending on technological advances.

Structural Measures

Flood Prevention and Drainage - Boeuf River, the outlet, has been improved by the U. S. Corps of Engineers. The improvement of upstream waterways in the watershed will increase the discharge rate but not the runoff volume into the Boeuf River. The drainage areas of the channels to be improved constitute a small portion of the total drainage area of the outlet. Present and with project hydrographs for downstream areas have been studied and induced downstream damages were insignificant. A historical event of 5.2 inches of rainfall was routed from Channel M-11 downstream. The effect produced by improving Channel M-11 is an increase of less than 0.1 foot on Boeuf River. The next major area downstream is Channel M-7. The effect of the Channel M-11 improvement at this point is practically nonexistent due to attenuation by the Boeuf River. A larger event of 8.2 inches of rainfall produced an increase of 2.7 percent in peak discharge on the Boeuf River and a stage increase of less than 0.2 foot. Attenuation by the Boeuf River reduced this increase by more than one-third as it moved downstream to Channel M-7. Downstream from this watershed, the drainage area of the Boeuf River becomes indeterminate. At this point, any changes in discharge or stage are so small that they cannot be measured. The effect of the other channels which have much smaller drainage areas is negligible. Bayou Bonne Idee has a large drainage area, but the time at which it peaks is delayed such that it does not coincide with the Boeuf River peak.

The project will provide protection to agricultural land from the storm which is expected to occur on an average frequency of once every 3 years. This does not mean that the runoff from this storm will be contained wholly within banks. Rather, it means that the runoff from the storm will be back within banks 24 hours after the storm ceases. Runoff from storms of greater magnitude will inundate land for periods longer than 24 hours. However, the period of inundation will be shorter than it would be under present conditions, thereby reducing the probability of crop loss. Spillover flooding from Channel M-11 into Evaluation Unit III will be reduced due to

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spoil placement on Channel M-11. The reduction in time of flooding on roads will reduce the amount of materials, equipment, and labor required for their maintenance by about 77 percent.

The installation of the combined program of land treatment and structural measures will directly benefit about 94,600 acres of crop and pasture. The remaining 29,540 acres of crops and pasture are located on the loamy soils of the natural levee of Bayou Bonne Idee. These soils are better drained and not in need of project type action. Also included are the clay soils which are adequately drained according to Soil Conservation Service criteria or which could not be drained by project action because of ownership restrictions. Although benefits were not calculated on these areas, they will benefit from the accelerated installation of land treatment measures and by rotational systems allowable because of flood prevention and drainage provided the other lands by the project.

The project will accelerate the establishment of conservation practices and increase the effectiveness of applied ones. These practices will keep the soil in place and help remove excess water. Landowners and operators will construct and maintain adequate on-farm and group drainage facilities with the assurance that the desired benefits will accrue.

Approximately 1,500 people including farmers, their families, and their employees will directly benefit from the installation of project measures. Other persons dependent on farm trade will also benefit. For further details, refer to Economic and Social section of ENVIRONMENTAL IMPACTS.

Cotton, soybeans, rice, grain sorghum, and other minor crops make up 15, 68, 9, 3, and 5 percent respectively of the cropland. Floodwater and drainage effects are discussed together because the problems are inseparable. Channels which remove floodwater also remove drainage water. The gross value of crop and pasture lost due to inseparable flood prevention and drainage is estimated to be \$1,645,000 annually. Although all crops will be affected, soybeans will be used as an example to illustrate the extent.

The project will help implement the implications listed in the soybean study mentioned in the WATER AND RELATED LAND RESOURCE PROBLEMS section. The installation of project and land treatment measures will provide flood protection and improve drainage. This will decrease soil wetness, improve field conditions, and allow better timing and more time to perform needed practices. This means that land treatment practices can be applied at a faster rate. The decreased wetness will make herbicides more effective and allow more cultivations which will decrease weed infestations. Farmers will be more apt to leave more crop residues on the ground, do less fall plowing, and rotate other crops in the problem areas because of decreased wetness. This will conserve soil fertility, reduce erosion, improve wildlife habitat, and also help control weeds. Planting will be accomplished at more

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opportune dates. The more level, better drained fields will allow for utilization of larger, labor saving, and cost reducing equipment.

In general, the project will break the cycle of uneconomic conditions in which the farmers are now entwined. They will be able to:

1. Plant earlier thus getting better plant populations.
2. Control weeds and grasses better.
3. Harvest at more opportune times.
4. Produce higher quality and higher yielding crops.

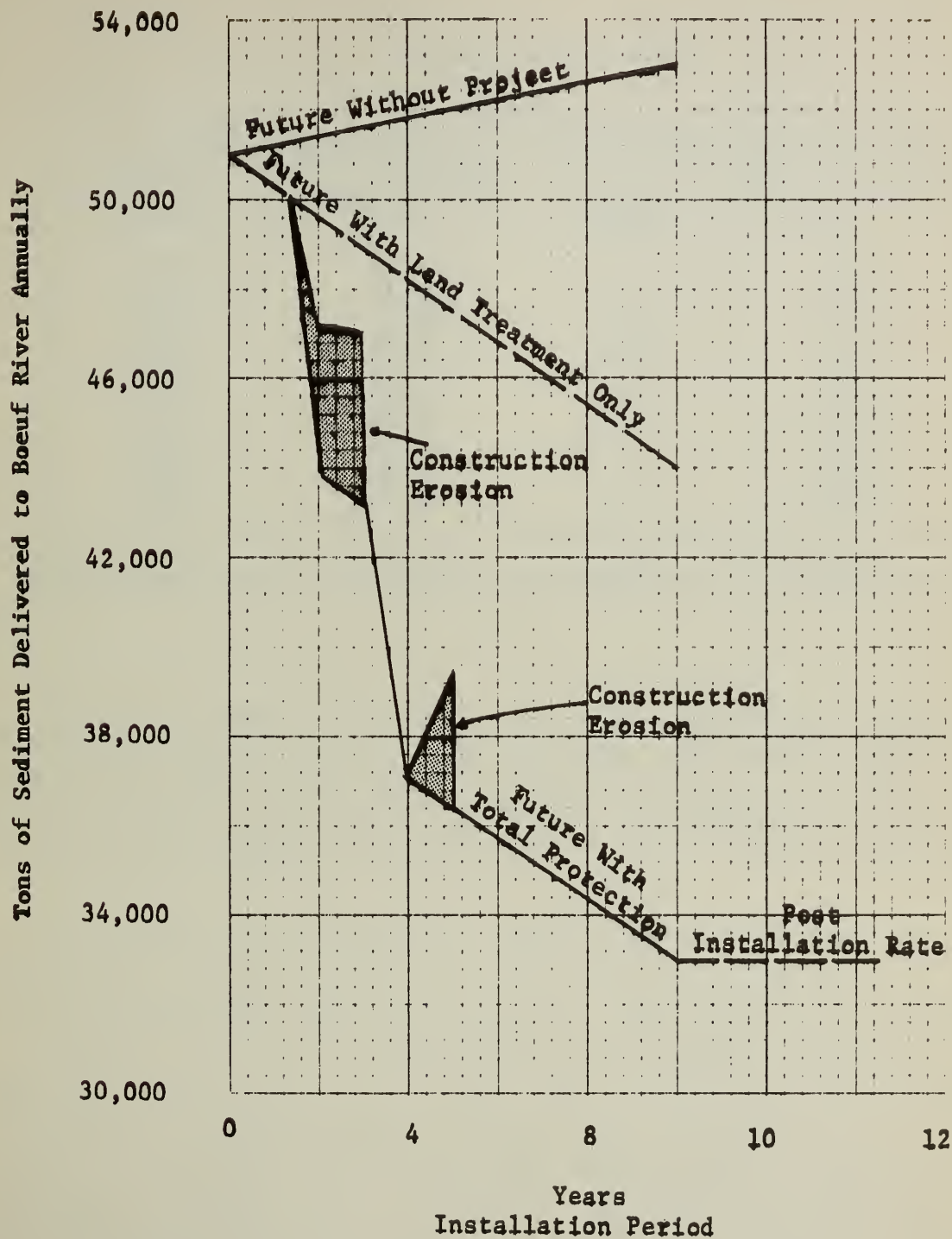
This will increase their incomes and encourage them to apply soil and water conservation practices which otherwise would be beyond their financial means.

Other crops will be affected in a similar manner. Yields will be increased because of higher and healthier plant populations which will have to compete less with weeds. Pasture will also be affected. Grasses will grow faster providing more forage. Unpalatable water tolerant weeds will not thrive under better drained conditions. Stocking rates will increase. The land will be used nearer to its potential because less grazing days will be lost.

Reduction in time necessary for land preparation, reduction in frequency of replanting, more effective weed control measures, and more efficient harvesting will reduce the per acre cost of production. These reductions in production costs will average about 7 percent for all crops and amount to about 7 percent for cotton and soybeans, 4 percent for rice, and 10 percent for grain sorghum. These will total about \$155,800 annually. Longer periods of time will be available during critical production periods for maximum utilization of equipment and other factors of production. Reductions in flooding and increased timeliness of operations will also increase the quality of products. These increases in quality will result in increases in prices of about 1 percent for cotton, soybeans, and rice and 4 percent for grain sorghum. These benefits amount to approximately \$83,800. Cotton, soybeans, rice, and grain sorghum yields are expected to increase 18 percent, 28 percent, 6 percent, and 28 percent, respectively.

Erosion and Sediment - During project installation, excavation of project channels will cause approximately 10,000 tons of sediment to be delivered to Boeuf River. This figure is based on an estimate of 0.1 foot of erosion taking place on 80 percent of the raw construction surface with vegetative practices becoming effective in 90 days. The 10,000 tons will be offset by reductions obtained from land treatment and structural measures. The construction schedule is such that sediment induced during this period will not increase the Future With Project sediment yields to higher than the Future With Land Treatment Only Condition or Future Without Project Condition. The graph and chart on the following pages illustrate this statement.

Bayou Bonne Idee Watershed Sediment Yield to Boeuf River



Bayou Bonne Idee Watershed

Sediment Yield to Boeuf River During the Project Installation Period					
Year	Future Without Project (tons)	Future With Project Excluding Construction (tons)	Construction (tons)	Future With Project Including Construction (tons)	Reduction (tons)
0	51,000	51,000	0	51,000	0
1	51,200	50,200	0	50,200	1,000
2	51,400	44,000	3,200	47,200	4,200
3	51,600	43,200	4,000	47,200	4,400
4	51,800	37,000	0	37,000	14,800
5	52,000	36,400	3,000	39,400	12,600
6	52,200	35,600	0	35,600	16,600
7	52,400	35,000	0	35,000	17,400
8	52,600	34,300	0	34,300	18,300
9	52,800	33,600	0	33,600	19,200
10	53,000	33,000	0	33,000	20,000
TOTAL	572,000	433,300	10,200	443,500	128,500

Sediment in tons delivered to Boeuf River versus years of the installation period is plotted on the graph. The tons of sediment computed for the various conditions are derived from - (1) the erosion which will occur under the various conditions and (2) the sediment yield to Boeuf River from this erosion. Erosion computations are based on the "Musgrave Equation."

The sediment yield from this erosion is based on information developed by the Soil Conservation Service during reservoir sedimentation studies. The upper line represents the future without project sediment delivered to Boeuf River. The upward trend is based on estimates of land now in conservation use programs being placed in agricultural production. The present rate of applying land treatment measures is also incorporated in this rate. The dashed line represents the decrease in sediment due to project land treatment measures. This decrease is a result of the accelerated application of land treatment measures. The lower line on the graph illustrates the additional reductions in sediment due to the structures. The grain size of the material being eroded was the primary factor used as the basis for estimating the trap efficiency of these structures. The shaded areas above the lower line show the sediment produced by channel construction.

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The table following the graph has a summation of 128,500 tons reduction in sediment. The table shows annual increments of sediment being delivered to Boeuf River from the watershed during the installation years. This table illustrates the same data as the graph but in tabular form.

Fish and Wildlife and Recreation - Reduced sediment and turbidity and removal of decaying debris and undesirable aquatic vegetation will improve the fishery habitat in Bayou Bonne Idee Channel. Damage which will result from construction in all other channels will be more than adequately mitigated by the new water created by Water Control Structure No. 4 in Bayou Bonne Idee and water control structures-type 2. The following table shows acres, average pounds per acre, and total pounds of fish by reaches in Bayou Bonne Idee and all other channels for preproject and postproject conditions.

ESTIMATED STANDING CROPS OF FISHES

	Preproject			Postproject		
		Pounds	Total		Pounds	Total
Channel	Acres	Per Acre	Pounds	Acres	Per Acre	Pounds
Bayou Bonne Idee						
Water Control						
Structure No.						
1	45	70	3,150	370	200	74,000
2	670	182	121,940	670	200	134,000
3	470	75	35,250	470	100	47,000
4	260	50	13,000	390	60	29,250
All Other Channels ^{a/}	60	75	4,500	116	75	8,700
TOTAL	1,505		177,840	2,016		292,950

^{a/} Channels with ponded water and/or intermittent flows.

The area behind Water Control Structure No. 1 will change from an intermittent stream to a 370-acre permanent water area. Fish populations are anticipated to rise from the current 70 pounds per acre during periods of flow to an estimated 200 pounds per acre as a result of the project. Population in the 670 acres controlled by Water Control Structure No. 2 are expected to increase from the current 182 pounds per acre to 200 pounds per acre as a result of project action. An increase from the current 75 pounds per acre to

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100 pounds per acre following project action is anticipated for the 470 acres controlled by Water Control Structure No. 3. Water Control Structure No. 4 will control 390 acres. Fish populations are expected to increase from the current 50 pounds on the existing 260 acres to 75 pounds per acre on the total 390 acres. The shallow water will also provide feeding areas for ducks.

Type of flows, other than for 10 miles in Bayou Bonne Idee and the 38 miles created by water control structures-type 2, will not be changed by the project. For example, channels with ephemeral flows before the project will still have ephemeral flows after the project. However, the length of time that water will flow will be decreased and some potholes will be eliminated. Channels presently having permanent water will have permanent water after the project is installed.

Increases of about 5 degrees Fahrenheit will occur on ponded water channels where bank and in-channel cover is removed. Fish populations consisting primarily of carp, shad, gars, and catfishes are in these channels. They are not expected to change since they are warm water species and will tolerate these temperature changes. There are no known rare or endangered species of fish occurring in this watershed.^{2/}

The problem of pesticides as pollutants is complex. There is little evidence that the proper use of pesticides is creating water pollution problems. On a nationwide basis, many cases of fish kills have been traced to dumping or improper use. No such cases have been known to occur in the watershed.

Reports of a study show that gross indicators such as vital statistics from the State Board of Health and success from fishing and hunting do not indicate any detrimental contamination of the environment in Louisiana from chlorinated hydrocarbon pesticides. The results of the study agree reasonably well with findings expected on the basis of the amount of insecticide used in a given area. Residues were quite low in the control area (mostly forest land) and higher in areas of heavy pesticide usage (agricultural land). The data from this study did not indicate extensive buildup of pesticide residues in the Louisiana environment. The only animals sampled that

^{2/}Robert R. Miller, "Threatened Freshwater Fishes of the United States," Transactions of American Fisheries Society, No. 2 (Lawrence, Kansas: Allen Press, 1972), pp. 239-252.

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showed consistently high residues were fish. Residue levels were found to be related to pesticide usage.^{3/}

Published data on quantitative and qualitative analyses of water quality in the watershed is limited. The Soil Conservation Service has developed a monitoring program for this watershed to determine preproject and postproject water quality conditions. This program will include a close study of the activity and land use changes that occur in the drainage area above each sampling location. These studies will include quantitative analyses and determine as near as possible the source and cause of identifiable pollutants.

The monitoring program will measure fish population in channels, pesticides in the water, channel soil, and fish tissue. Fertilizer residue in the channel water will be measured to identify nitrogen, potash, and phosphate. A coliform count will be made. Water samples will be analyzed to determine the ppm of suspended sediment.

The project will be monitored a minimum of 2 years preproject and 5 years postproject. If during this time it is determined that the project will cause significant increases in deterioration of water quality, appropriate modifications in the planned measures will be made. This program will be conducted jointly with the Louisiana Wild Life and Fisheries Commission, the U.S. Fish and Wildlife Service, the Louisiana Board of Health, the Agricultural Research Service-Louisiana State University Feed and Fertilizer Section, the U.S. Geological Survey, and the Soil Conservation Service.

Disturbances in channel rights-of-way during construction will cause losses in wildlife habitat. These will be partially offset by the vegetation established on the channel side slopes, berms, spoil, and 16 wildlife openings on 1,280 acres of forest land administered by the Morehouse Parish School Board. The tabulation on the following page illustrates changes in bottom land hardwood habitat in terms of acres and number of animals.

Mourning doves and bobwhite quail will experience increases of about 288 acres in habitat. This will result in a 0.2 percent increase in mourning dove population and a 0.3 percent increase in bobwhite quail. Deer and squirrel will be adversely affected by the project. Habitat losses consisting of wooded channel banks and forest land amount to 228 acres, resulting in a 0.2 percent decrease in population. Clearing of wooded channel banks will decrease waterfowl habitat by about 407 acres which will cause a 0.2 and 0.3 percent decrease in resident and migratory waterfowl, respectively. The decrease in squirrel and deer

^{3/} E. A. Epps, et al. "Preliminary Report on a Pesticide Monitoring Study in Louisiana," Bulletin of Environmental Contamination and Toxicology, Vol. 2, No. 6 (New York: Springer Verlag, Inc., 1967), pp. 333-339.

PREPROJECT AND POSTPROJECT
HABITAT ACRES AND POPULATIONS OF WILDLIFE SPECIES

Species	Animal Acre Ratio ^{a/}	Preproject		Changes Due to Project	
		Total Acres	Total Animals	Acres	Animals
Dove (Migratory)	1:4	124,800	31,200	+288	+72
Quail	1:50	124,800	2,490	+288	+6
Squirrel	b/	13,080	4,310	-554	-265
Deer	c/	13,080	520	-554	-19
Rabbit	1:10	137,880	13,785	-228	-22
Waterfowl (Resident)	1:150	142,505	953	-407	-2
Waterfowl (Migratory)	1:15	142,505	9,495	-407	-27

^{a/}Data developed in cooperation with the Louisiana Wild Life and Fisheries Commission.

^{b/}One squirrel per 3 acres of forest land.
One squirrel per 5 acres of wooded channel banks.

^{c/}One deer per 25 acres of forest land.
One deer per 50 acres of wooded channel banks.

habitat represents the largest change of any of the other species. This decrease amounts to about 4.0 percent of the habitat in the watershed and 0.0005 percent of the habitat within a 60-mile radius.

About 2 percent of the total wetlands in the watershed will be affected by the project. This 2 percent represents 0.00075 percent of the total wetlands within a 60-mile radius of the project area. The effect on this 105 acres (2 percent) of type 1 wetlands will be a reduction in the amount and duration of flooding. These changes will adversely affect waterfowl populations. This reduction in flooding will leave the resource unaffected in relation to other game species' habitat requirements. The reduction in flooding will be mitigated by the construction of Water Control Structure No. 4 on Bayou Bonne Idee.

Wood duck populations in Bayou Bonne Idee Channel after project installation will be at or near present levels. The most valuable wood duck habitat in the bayou, 47 acres immediately below Water Control Structure No. 2, will be left undisturbed. Cover and den trees will be left in other sections of the bayou as described under the Planned Project section. Natural tree cavities removed during construction will be replaced with boxes to assure sufficient nesting sites. The installation of these nesting boxes will be a rewarding and educational experience for the Oak Ridge Boy Scouts. It will provide them an opportunity to learn to improve their environment for wildlife as well as for man.

The threatened and status undetermined species listed in the Plant and Animal Resources (Flora and Fauna) section will not be affected. This is because of their wide range in territory and the small habitat changes due to the project.

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The recreational facilities located near Water Control Structure No. 3 will provide recreational opportunities for boating, fishing, camping, picnicking, nature study, and other activities. The three other access points or boat launching areas will provide opportunities for fishing, hunting, and boating. About 1,430 acres of forested school board land will be opened to the public for hunting and recreation.

The daily design capacity of the recreation facilities are: boat launching - 246; camping - 240; picnicking - 400; nature study - 200. The greatest amount of use is expected to occur during the summer recreational season, Memorial Day through Labor Day; however, some use is expected year round because of the mild climate. Peak daily use on the average high-use day during the heavy-use season (usually the average summer Sunday), is estimated to be 763. Average annual use is estimated to be 38,200 visitor days. The increase in recreational use of this area will generate more traffic and public activity in the vicinity of the recreational area. This increase in use will cause higher noise levels and road maintenance.

The clearing of Bayou Bonne Idee and the additional permanent water created will increase the accessibility of the bayou. Presently, little of the bayou is trafficable by boat. After the project is installed, all of the permanent water areas will be accessible by boat. Quality of fisheries will be improved by removing undesirable vegetation, providing more open water, and establishing better access. The resulting resource will constitute a long narrow water body largely protected from excessive wind action by wooded strips along the banks. This resource will provide fisheries for about 105 boat and 40 bank fishermen per day.

General recreation activities related to the 10-mile portion of Bayou Bonne Idee classified as natural channel between Water Control Structures No. 1 and No. 2 will change. Boating and canoeing which are presently limited because of the dense vegetation and intermittent flow, will be increased by the clearing and construction of Water Control Structure No. 1. Although the areas for activities such as picnicking and hiking will be reduced, areas for these activities will still be available in the corridor of natural vegetation left on each side of the bayou. The areas reduced by the project have no value for picnicking and hiking; therefore, these activities will not be affected.

Although the total waterfowl population within the watershed will decrease slightly, hunting occasions will increase by about 500 because of increased accessibility and increased water areas. Approximately 59,000 visitor days of fishing, boating, and hunting will result annually from the improvements on the bayou.

Recreational opportunities will be available to the 5,200 people residing in the watershed and about 4,000 people from surrounding areas. The proposed facilities will make water-related recreational activities more available to local families.

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Recreational opportunities will be provided for residents of Bastrop, Mer Rouge, Oak Grove, Oak Ridge, and other towns in the parish. Residents of the city of Monroe and the surrounding parishes will also be provided additional recreational opportunities by the project.

The improved aesthetic appearance, higher quality water, and increased water areas in Bayou Bonne Idee could lead to development of summer houses and camps along some portions of this channel. The 9.6 miles of new permanent water created above Water Control Structure No. 1 and the existing 17 miles above Water Control Structure No. 2 will be the better locations since these are the areas of deeper water more conducive to this type development. The shoreline along this section of the bayou amounts to about 53 miles and is all privately owned. About 7 miles of this 53-mile section parallel a road within a few to several hundred feet. These would be the areas more likely to be developed since they are more accessible. Other areas would be less likely to be developed because of the higher expense of providing access.

The development of summer houses and camps along the banks of the bayou could deteriorate the quality of water in this channel if appropriate preventive measures are not employed. The project sponsors will be responsible for providing the necessary ordinances regulating the buildup along Bayou Bonne Idee so that its water quality will be protected. These ordinances will include building codes to insure the proper installation and functioning of sewage systems so that discharge will not enter into the bayou. These codes will also contain provisions for preventing sediment from entering the bayou during construction of houses and associated facilities.

Bayou Bonne Idee is a natural high bank stream with the adjacent land grade sloping away from the stream. This natural condition greatly reduces the potential adverse effects that could be induced by buildup. The grade will enable field lines and surface discharge to drain away from the bayou.

Archaeological, Historical, and Scientific - Two sites are in close proximity to project channels, but to the best knowledge presently available, these will not be disturbed. Results of the cooperative study being conducted by Northeast Louisiana University will indicate the effects the project will have on any known archaeological or historic site. If adverse effects should occur, the report will suggest mitigative or preventive measures.

Nonstructural Measures

The 1,430 acres of forested land made available for public use assures the existence of this diminishing resource. Children yet unborn will be able to hunt and experience life in these areas as their forefathers did in similar areas.

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Economic and Social

The economic base of the watershed, agriculture, will be enhanced. The project will increase agriculture development with consequent higher net returns which in turn, will stimulate the business and increase the profits of processors and sellers of agricultural products as well as other goods. The economy of the area will be enhanced by the higher salaries of those presently employed and those hired to do the additional work.

The gross sales of farm products are expected to increase from about \$7,066,000 without the project to \$8,711,000 with the project. This is an increase of approximately 23 percent. Increased use of production inputs required to obtain these higher gross sales are expected to increase from about \$1,359,459 annually without the project to \$1,714,916 annually with the project. This is an increase of approximately 26 percent.

The greater level of protection along with the reduced cost of production and increased quality of products will give farmers an incentive to increase production inputs. They will buy better quality seed and will use more fertilizer and lime. It is expected that they will spend \$158,000 buying fertilizer which will be necessary to attain the higher yields of the future as discussed under the Flood Prevention and Drainage section on pages 58-60. This is estimated to be 2,200 tons of fertilizer annually. There will be increases in expenditures for other products which will be used in harvesting and hauling the product to market. This will stimulate economic activity within the watershed as well as the surrounding areas. More jobs will be created in the processing and service industries. The value of property will increase which will provide for a higher tax base.

Installation of the project will create about 100 man-years of local labor. Of this total, 75 man-years will be created from installation of land treatment measures and 25 man-years will be created from structural measures.

The project will help slow the trend of decreasing number of farms and increasing size of farms. With the project, equipment will be more efficiently used on the farms. This and other factors, which will decrease cost, increase yields, and increase net returns, will increase the profitability of farming. This will cause farming to be more competitive with other industries inducing more people to remain on the farm. The out-migration trend may also be slowed.

The average annual overall net farm income will increase about \$1,700 per farm. With this increased and more stable income, the farmer may improve his house or buy a better automobile. He will be able to afford better dental and health care, more insurance, better clothes, and other amenities of life for his family. He will be able to pay his employees higher wages who in turn, will improve their living conditions.

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The problems of watershed residents caused by flooded roads and damaged bridges will be reduced. School buses will be able to travel their scheduled routes more regularly which will in turn, improve school attendance. The general public will be better able to utilize the roads for farming operations and marketing, and for commuting to places of employment and business during wet periods.

Local secondary benefits will accrue after the installation of project measures. The values added to the immediate products and services as a result of activities stemming from or induced by the project will enhance the overall local economy. The increased production of goods stemming from the project will place new demands on the transporting and marketing industries within the area. Because processing facilities are limited mostly to cotton gins, the effect on local processing facilities will be less than on the transporting and marketing sectors. Processors, business establishments, and other individuals not directly benefited will profit from increased sales of their agricultural and recreational associated goods and products. Suppliers of the needed materials and services required to make possible the benefits expected from installation of the project will realize an increased net income. The goods and services produced by the project will tend to stimulate local economic activity on a more permanent basis. Because most of the products produced are processed out of the watershed, economic activity in the region will also be increased.

FAVORABLE ENVIRONMENTAL IMPACTS

- A. Flooding on roads and bridges will be reduced by about 77 percent.
- B. Ninety-four thousand and six hundred acres of crop and pasture will benefit from accelerated land treatment application, reduced flooding, and better drainage.
- C. Twenty-nine thousand, five hundred and forty acres will benefit from accelerated application of land treatment and rotational systems.
- D. About 1,500 farm-related individuals such as farmers, their employees, and their families will benefit from increased incomes.
- E. Average farm income will increase by about \$1,700 per farm annually.
- F. Farm production costs will be reduced by an average of about 7 percent.
- G. Price of farm products will increase by about 1 percent.
- H. Sheet erosion will be reduced from an average of 3.0 tons per acre to 2.2 tons per acre per year over the entire watershed.
- I. Sediment delivered to Boeuf River via Bayou Bonne Idee will be reduced from 26,000 tons to 11,000 tons per year after installation of project measures.
- J. Watershed residents and persons from surrounding areas will benefit from the 97,200 visitor days of hunting, fishing, boating, picnicking, and other activities provided by the recreation development.
- K. Total pounds of fish will increase from 176,500 to 292,950.
- L. Improvement of fishery resources will provide fisheries for about 105 boat and 40 bank fishermen per day.
- M. Mourning dove and bobwhite quail populations will increase temporarily.
- N. Utilization of proper forest management practices on 250 acres of forest land under the land treatment program will increase its wildlife carrying capacity by about 10 percent.
- O. Wildlife carrying capacity on 1,280 acres of forest land administered by the Morehouse School Board will be improved by the installation of 16 wildlife openings.
- P. One thousand, three hundred and thirty acres of forest land administered by the Morehouse Parish School Board will be made available for public use.

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- Q. Water Control Structure No. 4, located on Bayou Bonne Idee, will create about 390 acres of wetland area. The structure, together with other increases in wetland areas by similar structures, will provide more protection from private encroachment since project installation requires land easements.

ADVERSE ENVIRONMENTAL EFFECTS

- A. About 170 acres of open land vegetation will be temporarily disturbed around construction sites along Bayou Bonne Idee.
- B. About 70 acres of cropland and 40 acres of forest land will be taken up by the recreation facility.
- C. About 2,083 acres of land will be disturbed during installation of All Other Channel Work. This disturbance will result in the following reductions in wildlife habitat and populations:
 - (1) 554 acres of deer habitat resulting in a loss of 19 deer,
 - (2) 554 acres of squirrel habitat resulting in a loss of 265 squirrels,
 - (3) 228 acres of rabbit habitat resulting in a loss of 22 rabbits, and
 - (4) 407 acres of waterfowl habitat resulting in a loss of 29 waterfowl.
- D. Temperatures will increase by about 5 degrees fahrenheit in some of the ponded water areas.
- E. Sediment yields in the channels will increase temporarily for about 90 days during excavation of channels.
- F. About 3 acres of land will be taken up by the boat launching areas.
- G. Noise, traffic volume, and road maintenance will increase, especially in areas surrounding the recreational facilities.

ALTERNATIVES

Land Treatment Only - Needed land treatment can only be applied by some combination of structural measures. The inadequacy of present outlets for on-farm drainage systems would prevent land treatment measures alone from alleviating existing problems.

Flood Area Zoning - Because the watershed terrain is so flat, it would be difficult to define the flood plain accurately enough to zone it. Since the majority of the land is already in agricultural production and since most ordinances approved are not retroactive in authority, flood plain zoning would have little or no effect.

Floodwater Retarding Structures - The flat terrain provides no sites for the construction of floodwater retarding structures.

Floodproofing - Since the topography of the area is relatively flat and the flood plain is not accurately definable, the problems are located in a large contiguous area. The establishment of levees around individual farms or fields is a physical possibility although not practical. Since this is a high rainfall area, pumps would have to be installed to remove runoff from within the leveed area. In order to prevent impounding of water from abnormally high direct precipitation within the levee system, the capacity of the pumps required would be large and a system of channels would still be required outside the leveed area to remove the water from the pumpoff. Otherwise, flooding would be induced on other areas. Backwater flooding from Boeuf River is not a serious problem except during infrequent storms. Therefore, flooding which has to be contended with is headwater flooding from the drainage area within the watershed.

Channel Work - Various sizes and lengths of channels were studied to determine which level of protection, the 1.5-year, 3-year, or 5-year, is most desirable. These levels of protection evaluated were held constant for each channel because the intensity of land use is about the same throughout the entire area. The effects that these three levels of protection would have on preproject conditions were evaluated. The effects of the 1.5-year and 5-year are explained in this section; the 3-year is explained in the Planned Project section.

Channel Work Required to Provide the 1.5-year Level of Protection - This alternative would require work on about 201 miles of channels at a total installation cost of about \$2,789,400. The annual cost of this alternative including operation and maintenance would amount to about \$216,900. This alternative would offer an estimated 64 percent reduction in damages. The work would require about 2,264,000 cubic yards of excavation.

ALTERNATIVES

Land used for channels would change in the following manner:

1. Land within channels would increase by about 8 percent or 90 acres over the present acreage.
2. Land used for berms would increase by about 83 percent or 217 acres.
3. Land used for spoil would decrease by about 61 percent or 450 acres.

Land occupied by spoil will decrease because existing and project created spoil will be spread for channels located in open land and for some located in wooded channel banks.

Type of habitat in which channels are located was categorized according to examples shown in the Plant and Animal Resources section. Channels located on cropland or pastureland which had no trees or brush on the berms and spoil were categorized as open land channels. Channels located in cropland or pastureland having narrow strips of trees or brush on the berms and spoil were categorized as wooded channel bank. Channels located in forests were categorized as such. Land used for channels, berms, and spoil within these three categories would change in the following manner:

1. Open land acres occupied would decrease by 12 percent or 122 acres.
2. Wooded channel bank acres occupied would decrease by 11 percent or 104 acres.
3. Forest land acres occupied would increase by about 35 percent or 83 acres.

The decrease in wooded channel bank acreage would be a loss in wildlife habitat because the adjacent areas would either be cultivated or grazed, and the maintenance program will not permit them to grow back into woody vegetation. The acres disturbed in forest land would be allowed to grow back into trees by natural plant succession. About 1,550 acres will be cleared within Bayou Bonne Idee and 12 acres of trees and brush would be cleared within other channel beds.

Channel Work Required to Provide the 5-Year Level of Protection - About 202.5 miles of channel work at a total installation cost of about \$3,594,700 would be required. Annual cost of this alternative including operation and maintenance would amount to about \$264,400. This alternative would offer an estimated 84 percent reduction in damages. The work would require about 3,497,000 cubic yards of excavation.

Land use for channels would change in the following manner:

1. Land within channels would increase by about 15 percent or

My dear Sir,

I have the pleasure to acknowledge the receipt of your letter of the 10th inst.

and in reply to inform you that the same has been forwarded to the proper authorities.

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

I am, Sir, very respectfully,
Yours truly,
J. H. [Name]

ALTERNATIVES

176 acres.

2. Land used for berms would increase by about 85 percent or 222 acres.
3. Land used for spoil would decrease by about 58 percent or 430 acres.

Land used for channels and berms will increase because of channel enlargement and leaving wider berms to serve as maintenance access. Land occupied by spoil will decrease because existing and project created spoil will be spread for channels located in open land and for some located in wooded channel banks.

Land used for channels, berms, and spoil within the three categories, open land, wooded channel banks, and forests, would change in the following manner:

1. Open land acres occupied would decrease by 8 percent or 84 acres.
2. Wooded channel bank acres occupied would decrease by about 6 percent or 57 acres.
3. Forest acres occupied would increase by about 46 percent or 109 acres.

The decrease in wooded channel bank acreage would be a loss to wild-life habitat because the adjacent areas would either be cultivated or grazed and the maintenance program will not permit it to grow back into woody vegetation. The acres of spoil disturbed in forest land, would be allowed to grow back into trees by natural plant succession. About 1,550 acres of trees will be cleared within Bayou Bonne Idee and 12 acres of scattered trees and brush would be cleared within channel beds.

Two other alternatives were studied in relation to channel work:

- (1) the construction of levees and floodgates to prevent backwater flooding is an increment which could have been added to supplement the channel work and
- (2) routing Channels M-4 and M-7 to outlet into Channel M-2 as an alternate way of achieving the channel work in Evaluation Units I and II.

Construction of Levees and Floodgates to Prevent Backwater Flooding from Boeuf River - Construction of levees and floodgates along the west side of the Boeuf River was investigated as a possible solution to prevent backwater flooding. Peaks on the Boeuf River from a 3-year frequency storm produce stages high enough to back water into the low adjacent areas. The Boeuf River hydrograph for this storm rises and falls rapidly. Backwater flooding produced is of short duration and occurs largely during the noncrop season. The watershed area is small compared to the Boeuf River drainage area and correlation between stages on the Boeuf River and rainfall on the

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watershed is practically nonexistent. The cost of such a system to prevent this flooding would exceed the benefits.

Evaluation Unit II was chosen as the test for this alternative. Compared to the other units, it had the largest area subject to backwater flooding and appeared to be the most feasible. Benefits resulting from the installation of these floodgates and levees would amount to about \$8,400 annually. Costs of installing just the floodgates would amount to about \$30,000 annually giving a benefit-cost ratio of 0.3 to 1.

Routing Channels M-4 and M-7 to Outlet into Channel M-2 - This alternative would divert runoff from approximately 59,000 acres from entering the Boeuf River at mile posts 168 and 160, and cause it to enter at mile post 154. Approximately 8.3 million cubic yards of excavation would be required. Appurtenant measures and excavation, at a cost of about 5 million dollars, would be required to construct this diversion. The 3-year level of protection as previously defined in the objectives would be provided. About 1,690 acres of right-of-way, which is an additional 540 acres over planned comparable measures, would be required to construct the diversion and associated laterals. Primary agricultural benefits expected from this alternative would amount to approximately \$490,000 annually. Annual cost including operation and maintenance would be about \$520,000. The benefit-cost ratio would be 0.9 to 1.

No Project - The soils in the problem area are moderately to highly productive and can be farmed economically if properly treated to reduce drainage and flood problems. Approximately 80 percent of the problem area is in agricultural production and has more than doubled in value in the last 10 years. Projections for food and fiber needs show that crop and livestock production will increase by 25 percent and 36 percent, respectively, from 1980 to 2020 in the water resources subarea in which the watershed is located. Because of the land's productivity, its increasing value, and the increasing demands for food and fiber, the problem soils will remain in agricultural production whether or not the project is installed.

If the project is not installed, conditions in the watershed will continue to deteriorate. The local Sponsors do not have sufficient funds to install the complete channel system needed. Needed work would continue to lag behind without project-type assistance. Work which would be accomplished would be on a piecemeal basis without appurtenant measures needed to control erosion and sediment. Installing channels in this manner would relieve problems in some areas, but intensify them in other areas.

Several tracts of land have been sold in the past few years because of financial difficulties stemming from drainage and flood problems. Most of the tracts sold were bought by larger landowners who had sufficient other holdings to secure these purchases and offset any losses incurred. This trend is expected to continue in the future without project action. Eventually, most of the problem land would be controlled by large landowners or companies. These would be able to install channel work without

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financial assistance from public sources. An entrepreneurs, most of these large landowners or companies will be attempting to get the largest monetary return on their investment with little consideration given to wise use of the land for environmental conservation and sustained productivity for future generations. Again, necessary appurtenances such as grade stabilization structures, water control structures, and vegetative measures which would help control erosion and subsequent sediment would probably not be installed. Since individual investors' concrete monetary returns on mitigation and recreation measures would be relatively low compared to returns from channel work, installation of measures which would replace or enhance fish and wildlife habitat is unlikely. If the project is not installed, net annual benefits of about \$697,700 would be foregone.

SHORT-TERM VS. LONG-TERM USE OF RESOURCES

Cropland and forestry were the major land uses after the settlers first came to the watershed. The forest was gradually cleared until the land is now predominately in agriculture. It is expected to remain in agriculture in the future.

The level of drainage and flood protection provided by the project will improve field conditions which will allow for higher crop yields, elimination of unnecessary costs, and better quality of products. These conditions will induce farmers to apply more measures and practice better conservation. The increased application of land treatment measures will ensure sustained production for future generations. Since the major land use is now agriculture and is expected to be so in the future, the project is compatible with the long-term uses of the land and water. If the project is maintained as planned, it should continue to be effective in conserving land and water resources after its designed 50-year life unless new varieties of crops and methods of farming are developed which would require different levels of protection.

Bayou Bonne Idee Watershed is located in the Ouachita Water Resource Subregion of the Lower Mississippi Region. The entire Ouachita River Basin is covered by all or parts of 39 soil and water conservation districts of which 28 are in Arkansas and 11 are in Louisiana. Adequate land treatment has been established on about 40 percent of the basin area and progressing annually at about 2 percent of the total needs. The status of Public Law 566 projects for flood control can be observed in the following table.

STATUS OF PUBLIC LAW 566 PROJECTS

Item	: Projects Installed :		: Projects Approved :		: Project Applications :		Total
	(no.)	(Acres)	(No.)	(Acres)	(No.)	(Acres)	(Acres)
<u>Ouachita Water Resource Subregion</u>							
Louisiana	1	186,072	13	2,065,806	5	515,780	2,767,658
Arkansas	10	295,669	12	787,790	8	1,436,132	2,519,591
Total	11	481,741	25	2,853,596	13	1,951,912	5,287,249
<u>Lower Mississippi Water Resource Region</u>							
Louisiana	6	296,590	21	2,819,270	7	531,820	3,647,680
All Other States	19	501,044	40	6,946,689	Not Tabulated		7,447,733
Total	25	797,634	61	9,765,959	7 ^{a/}	531,820 ^{a/}	11,095,413 ^{a/}

^{a/} Does not contain applications received for states other than Louisiana.

RESOURCES

Of the total land area in the Ouachita Water Resource Subregion, about 33 percent is in some stage of development, planning, or requesting assistance under Public Law 566. Approximately 15 percent of the total land area in the Lower Mississippi Water Resource Region is covered by Public Law 566 projects which are either installed or approved for planning.

Other than Public Law 566 projects, extensive flood control measures have been installed throughout the Lower Mississippi Region. Approximately 35,000 square miles of the region would be overflowed by a great flood on the Mississippi River if it were not for a system of main line and backwater levees, floodways, reservoirs, and channel improvements in the alluvial valley. As a result of these improvements, approximately 24,000 square miles receive essentially complete protection from flooding from the Mississippi River and about 3,600 square miles in backwater areas and floodways receive a lesser degree of protection. In addition, systems of reservoirs, levees, and channel improvement reduce or prevent headwater flooding. Boeuf River, the outlet for this watershed, has been improved by the U.S. Army Corps of Engineers. Installation of this project should complete the works necessary for flood prevention in this watershed.

The U.S. Army Corps of Engineers, in planning the enlargement of Boeuf River and construction of the Bayou Lafourche Diversion Canal, considered such factors as (1) future drainage improvement such as is now planned by this project and (2) future land use changes. At present, no further improvements are planned for Boeuf River. However, further improvements are presently authorized for the Bayou Lafourche Diversion which carries some of the flow from Boeuf River. These improvements will make the river and its outlet have sufficient capacity to carry the increased runoff from this watershed and the other planned projects in its drainage area.

This project and other similar projects will reduce the amount of sediment delivered downstream because of the application of land treatment measures. Historical events of 5.2 inches and 8.2 inches of rainfall will produce stage increases from present to postproject conditions of less than 0.1 and 0.2 feet, respectively, at the mouth of a main channel. These increases will diminish to a point beyond differentiation 15 miles downstream. Other channels in this project and other projects peak at different times. Downstream stage increases would be similarly small.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

About 500 acres of land within Bayou Bonne Idee Channel will be committed to permanent water whereas presently it is in intermittent water. Water control structures will be located in the channel rights-of-way, so no additional land will be required for these. Land presently taken up by channels, berms, and spoil will decrease by 103 acres in open land and 77 acres in wooded channel banks and increase by 97 acres in forest land. The decrease in open land and wooded channel banks will result from the spreading of existing spoil and new spoil during construction. Land occupied by spoil will decrease by 441 acres. The decrease is partially offset by a 137 acre increase in land taken up by channels and a 221-acre increase in land taken up by berms. After construction is complete, land taken up by channels, berms, and spoil will have decreased by 83 acres from the preconstruction condition.

About 70 acres of cropland and 40 acres of forest land will be committed to the main recreational facility. The 40 acres of forest will remain predominantly wooded since only selective clearing of brush and small trees will be done for the installation of roads, camping spurs and nature trails. About 3 acres of miscellaneous land along the banks of Bayou Bonne Idee will be required for the boat launching areas. About 16 acres of fairly dense stands of small diameter hardwoods in forested tracts will be cleared and kept in the weed and brush stage of plant succession to provide browse for wildlife.

Since channels have to be maintained and kept clear of obstructions to function as planned, they will preclude the use of the land for any other purpose for at least the life of the project. Weeds and grass will be allowed to grow in the channels and on the berms. Since trafficability for maintenance equipment access is necessary, large vegetation such as trees will not be allowed to grow on the berms and in the channels. Spoil in the forest will be allowed to grow back into trees. Use of spread spoil in the open land will not be precluded for any particular purpose. Use of the land taken up by project measures on Bayou Bonne Idee and for the recreation facility will be precluded by the project during its life.

If archaeological materials are encountered during construction, they will be salvaged. Should such materials be discovered, those resources excavated would be committed to museums or other institutions of learning.

The expenditure of land, labor, and capital resources on items such as fuel, equipment, sand, gravel, cement, etc., needed for project installation, once expended, cannot be reversed. Commitments of resources will be mostly capital intensive since large machinery will be used to do much of the work. Small amounts of concrete, sand, and gravel will be

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used in the grade stabilization structures and water control structures. The total monetary value which will be expended for project installation, including land treatment and structural measures, amounts to \$7,182,150.

CONSULTATION WITH APPROPRIATE
AGENCIES AND OTHERS

General

An application requesting assistance in solving problems relating to soil and water management was submitted to the State Soil and Water Conservation Committee on October 31, 1967. On December 19, 1967 this committee approved the application and on June 24, 1969 it was given a high priority. During the interim period between approval of the application and assignment of a high priority, a meeting was held with the project Sponsors and other related organizations to discuss project objectives and the responsibilities of each respective group. After the gathering of data had begun in the planning stage, several meetings were held to discuss progress and findings.

A series of three public meetings was conducted by the project Sponsors in Morehouse Parish to determine what the local people desired for project objectives. Before each meeting, publicity was given in the form of notices and a map of the watershed in the local daily newspaper. The Extension Service, through their mailing list, sent individual letters to landowners in the area. Once this sector of the local people had decided on desirable project measures, a public meeting was held to give other sectors of the population an opportunity to express their opinions and ideas about the plan.

Personnel of the Soil Conservation Service and Louisiana Wild Life and Fisheries Commission made three joint field trips during planning to study possible effects of proposed project measures. Personnel of the U.S. Fish and Wildlife Service were present during two of these trips. The Louisiana Historical Preservation and Cultural Commission and the Curator of Anthropology at Louisiana State University were contacted to obtain the locations of places of historical or archaeological importance.

The Forest Service assisted in the survey of forest land needs and in the watershed plan formulation.

An informal field review of the preliminary draft work plan and environmental statement was held March 4, 1974 in Bastrop, Louisiana. Concerned local, State, and Federal agencies and interested groups were sent copies of the two documents before the meeting. Some of these agencies and groups presented their statements at the meeting. Others, unable to attend, mailed their statements.

Another meeting inviting comments from the general public was held March 18, 1974 in Bastrop. Responses to comments from the informal field review and how these responses were incorporated in the plan and statement were presented. Persons from the audience made statements and a question and answer period followed.

CONSULTATION

The work plan and environmental statement have been prepared considering comments and recommendations provided by the Sponsors, interested Federal and State agencies, and other groups.

Comments were requested on the draft work plan and draft environmental statement from the following agencies, groups, and individuals:

Department of the Army
Department of Commerce
Department of Health Education,
and Welfare
Department of the Interior
Department of Transportation
Environmental Protection Agency
Federal Power Commission
Office of Equal Opportunity
State Soil and Water Conservation
Committee - Louisiana
Governor's Council on Environmental
Quality
Louisiana Commission on
Intergovernmental Relations
Farmers Home Administration
Agricultural Stabilization and
Conservation Service
State Department of Highways -
Louisiana
Louisiana Department of Public Works

Department of Geography and Anthropology,
Louisiana State University
Louisiana Forestry Commission
U.S. Forest Service
Louisiana Forestry Association
Center for Agricultural Science and
Rural Development, Louisiana
State University
Louisiana Historical Preservation and
Cultural Commission
Louisiana Farm Bureau
State Parks and Recreation Commission -
Louisiana
Louisiana Cooperative Extension Service
Louisiana Wild Life and Fisheries
Commission
Louisiana Wildlife Federation, Inc.
Sierra Club, Delta Chapter
Ecology Center of Louisiana, Inc.
Mr. Clifford M. Danby

Discussions and Disposition of Each Comment on Draft Statement

Each issue, comment, or suggestion for improvement is summarized and a response given on the following pages. Comments are serially numbered where agencies have supplied multiple comments. The original letters of comment appear in Appendix F.

U.S. Department of Agriculture - Forest Service

Comment: Change "Cooperative Fire Control" to "Cooperative Forest Management" on page 25, paragraph 1, line 8. The 70,000 acres of forest land on page 61, paragraph 1, line 5 does not agree with the earlier statement of 80,000 acres on page 54. After these corrections are made, the State Forester and we concur in the Environmental Statement.

Response: Concur. Changes made at indicated places.

Department of Health, Education, and Welfare

Comment: Our review of the Draft Environmental Statement for the project discerns no adverse health effects that might be of significance

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where our program responsibilities and standards pertain, provided that appropriate guides are followed in concert with State, county, and local environmental health laws and regulations. We, therefore, have no objections to the authorization of this project insofar as our interests and responsibilities are concerned.

Response: None.

Department of the Interior

1. Comment: The statements on page 16 (line 21) of the work plan and page 57 (line 31) of the draft statement indicating that there are no mineral deposits in the watershed may not be entirely correct. We suggest using the term "no known mineral deposits."

Response: Concur. Changes made in appropriate places.

2. Comment: The concrete, sand, and gravel required for construction of the proposal are not mentioned. These resource commitments will be irretrievable and should be so noted.

Response: Concur. Changes made in the Irreversible and Irretrievable Commitments of Resources section.

3. Comment: The proposed action will not adversely affect any existing, proposed, or known potential unit of the National Park System or any known historic, natural, or environmental education sites eligible for the National Landmark Programs.

Response: None.

4. Comment: Page 22, paragraph 2 - It is stated that a letter from the Curator of Anthropology contained information on archaeological sites. What institution is the Curator associated with? A mere records check such as is indicated is inadequate. A professional archaeologist should survey the project area and the final statement should contain information on sites to be affected, including location, type, and significance. If archaeological sites or materials will be affected, there should be information on mitigating measures to be undertaken.

Response: Concur. Appropriate information has been added in the Planned Project section and the Environmental Impacts section.

5. Comment: In the interest of improving the accuracy of the statement, two minor discrepancies on page 53 should be corrected. The eastern glass lizard referred to occurs only in extreme south-eastern Louisiana. However, the western slender glass lizard is common in the project area. Also, the red-cockaded woodpecker should be listed with the southern bald eagle and Bachman's warbler as an endangered species.

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Response: The suggested change involving the eastern glass lizard and the western slender glass lizard was made. The red-cockaded woodpecker was not listed as an endangered species because it does not occur in the watershed. Mature pine trees, which are an essential part of their habitat, do not exist in this watershed.

6. Comment: Page 74, the section entitled Recreation Problems - The source of recreation demand, supply, and need data given in this section should be cited.

Response: Concur. This was done.

7. Comment: Page 74, paragraph 1, lines 4 and 7 - "Recreational needs" should be changed to "recreational demands." The most commonly used terminology is that recreation demand minus recreation supply equals recreation needs.

Response: Concur. This was done.

8. Comment: Page 92, the section entitled Fish and Wildlife, and Recreation - General recreation activities related to the natural stream and displaced by the project should be discussed. These activities may include canoeing, boating, picnicking, hiking, or any other activity more suited to the natural stream condition.

Response: The effect of the project on these activities are discussed in the suggested section.

9. Comment: Page 99, paragraph 3, sentence 1 - Clarification is needed relative to whether this statement concerning aesthetic appearance applies to the entire project or portions of it.

Response: Concur. Change has been made which will clarify the statement.

10. Comment: Page 115 - Should the project construction phase encounter archaeological materials, this will result in an irreversible and irretrievable commitment of such resources, even if salvage excavations are accomplished.

Response: This is discussed in the Irreversible and Irretrievable Commitments of Resources section.

Department of Transportation

Comment: We have no comments to offer nor do we have any objection to the project.

Response: None.

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United States Environmental Protection Agency

1. **Comment:** According to the draft statement, the increase in water area, improved aesthetic appearance, and higher quality of water may lead to the development of summer houses and camps along the banks of the Bayou. The development of this area could result in the degradation of existing water quality. Septic tanks improperly maintained could contribute leached effluent to the waterway, possibly causing unsightly algal blooms and unsanitary conditions. Also, the construction of housing facilities could increase the amount of sediment entering the Bayou from erosion. While the responsibility for providing safeguards to protect water quality in the Bayou rests with the Sponsor, we believe the statement should outline possible mitigative measures that could be used to control water pollution during project construction and maintenance.

Response: Concur. The effects of possible buildup along the Bayou have been included in the Environmental Impact section of the statement. Also included are means by which these effects could be prevented from occurring.

2. **Comment:** The inclusion of a project map depicting the exact location of selective clearing and one-side-only channel excavation would be helpful in explaining the proposed plan.

Response: The time lag between project authorization and implementation allows vegetative changes to occur in and along channels. The detailed channel surveys and designs developed at the construction stage will incorporate any of these changes which may have occurred in the interim period. Consequently, the locations of selective clearing and one-side-only channel excavation are better left as indicated in the plan.

3. **Comment:** Operation and maintenance at the proposed project site will include the use of certain herbicides. We suggest that the final statement include a list of pesticides or any toxic material that might be utilized at the site during or after construction. Assurances should also be given that only EPA registered pesticides will be used and applied in a manner consistent with their labeling.

Response: Concur. This information has been included in the Planned Project section of the statement.

4. **Comment:** Sanitary facilities at the proposed recreation site will include pit-toilets, flush toilets, and septic tanks. These facilities will require continuous maintenance in order to insure that they function properly. The final statement should include a discussion of the disposal methods that will be used in maintaining the pit-toilets. Additional information identifying the location of the septic tank disposal field in relation to the Bayou or any potable water supply, and an approximation of wastes to be treated would strengthen the final statement.

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Response: Concur. A reviewer reading the Draft Environmental Statement would understand that the pit-toilets were located at the main recreational facility. However, this is not the case. The pit-toilets are located at the three boat launching areas which are on sections of the bayou several miles away from the main facility.

Information requested in this comment and clarification of the location of pit-toilets have been included in the Planned Project section of the statement.

5. Comment: The final statement should contain an assurance that every available means will be used to keep air, water, and noise pollution at a minimum during construction. We believe a discussion of the procedures to be utilized at the various construction sites would strengthen the statement.

Response: Concur. This information has been included in the Planned Project section of the statement.

Department of the Army

Comment: The draft environmental impact statement appears to be adequate and we have no comments to offer.

Response: None.

Louisiana Department of Public Works

Comment: There are several aspects of the plan we would like to discuss with your office prior to finalization of the project plans. These areas of discussion would be in reference to the proposed use of stoplogs for the Type 1 structures and also to the average depth of water above Water Control Structure No. 4.

Response: These items were discussed with a representative of the Department of Public Works. No changes will be made in the stoplog design feature at this time. The Soil Conservation Service will review this feature at the detailed design stage to see if a more manageable drawdown structure can be installed. Average depth of water above Water Control Structure No. 4 can not be raised because drainage above it would be impaired.

Louisiana Department of Highways

Comment: Possible effects this project may have on State highways located within the proposed project site should be clarified.

Response: Concur. A discussion on bridge and culvert changes has been included in the Planned Project section.

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Louisiana State Soil and Water Conservation Committee

Comment: We have reviewed this material and we think we have a good project. The State Committee supports this project and has no additional comments to make.

Response: None.

Commission on Intergovernmental Relations

Comment: The Draft Environmental Statement of the Bayou Bonne Idee Watershed Project has been reviewed by our office to determine which agencies would be interested in the contents of the environmental statement.

It was noted that the Louisiana Department of Public Works, and the Louisiana Wild Life and Fisheries Commission participated in the development of the statement. Since the project also involves the development of recreational resources and facilities in the Bayou Bonne Idee area, copies of the environmental statement have been forwarded to the Louisiana State Parks and Recreation Commission for review and comment. Comments from the Recreation Commission will be forwarded directly to your office.

This should fulfill the requirements of the State Clearinghouse as imposed by Part II of OMB Circular A-95.

Response: None.

Louisiana Wildlife Federation, Inc.

1. Comment: What data can the Soil Conservation Service include in the environmental impact statement concerning the extent to which recommended land treatment measures have been installed on previously completed watershed projects and the extent to which these measures have resulted in a reduction in sedimentation?

Response: Five watershed projects in the Louisiana delta have a land treatment program which has been underway for several years. These watersheds, the percent complete, and the percent of the planned time which has elapsed are as follows:

<u>Watershed</u>	<u>Percent Complete</u>	<u>Percent of Planned Time Which Has Elapsed</u>
South Tensas	80	100
North Tensas	100	100
Walnut-Roundaway	30	40
Central Madison	27	40
West Madison	75	88

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None of these projects were monitored before, during, or since the planned programs have gotten underway or have been completed. Consequently, data which would indicate the extent to which these measures have resulted in a reduction in sedimentation is not available. However, a monitoring program is presently underway in Bayou Bonne Idee Watershed to collect such data.

2. Comment: We understand the North Tensas watershed project was the first completed in the Louisiana delta. It has also been reported that Lake St. Joseph becomes excessively turbid following heavy rainfall in the vicinity of project-installed channels. What data does your agency have concerning the extent to which recommended land treatment measures have been installed and the extent to which sedimentation has been reduced on the North Tensas watershed project?

Response: Much of the land in the drainage area of Lake St. Joseph was in pastureland at the time the land treatment program was developed for the North Tensas Watershed. By the end of the project installation period, the increased demand for soybeans had caused land use to change from pastureland to soybeans. This change to cultivation results in more soil being bare during certain periods. Even with a land treatment program in place, untimely high direct precipitation will cause some soil particle movement during spring land preparation. One hundred percent of the land treatment planned to be installed during the project installation period has been applied. Data on changes of sedimentation is not available.

3. Comment: On page 69 of the statement is the following comment: "If good drainage was provided, the farmers would be more apt to maintain a good soil cover in winter because they would have more time for seedbed preparation in the spring." We agree that maintaining cover on croplands over the winter months would aid materially in reducing sheet erosion. What data does your agency have concerning the extent to which land-owners in the North Tensas Watershed Project have foregone fall land preparation since installation of project measures?

Response: Crop residue use is defined as using plant residues to protect cultivated fields during critical periods. At the time the North Tensas Watershed land treatment program was planned, 29,790 acres needed this type treatment. At that same time, 12,790 acres had been treated. Of the 16,849 acres remaining to be treated, 13,000 acres were programmed for treatment during the project installation period. At the end of this period, 14,570 acres had been treated which was 1,570 acres over the goal.

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4. Comment: We believe the Soil Conservation Service should make provisions to periodically report to the public, on a basis of every 5 or so years, the extent (as a percent of the total) to which land treatment measures are being carried out on completed small watershed projects and the extent to which sedimentation is being reduced.

Response: The field offices report to the State office on the amount of land treatment practices applied by the end of each fiscal year. This information is in turn reported to the National office. Anyone desiring information may write to the State Conservationist in Alexandria, Louisiana.

5. Comment: We believe the final environmental impact statement should contain a map (similar in quality to the Project Map, Figure 8) which shows both the proposed channels and existing woodlands. Both the Project Map and Status of Land Clearing Map (Appendix E) give some indication of the relationship between proposed channels and woodlands and it appears that much of the wooded land will be traversed by project channels thus greatly facilitating the clearing of the remaining 16,400 acres of forest land.

Response: The Status of Land Clearing Map, having been reproduced to a quality similar to the Project Map-Figure 8, clearly indicates the relationship between proposed channels and forest lands.

6. Comment: We continue our basic endorsement of the project and congratulate the Sponsors on their planning. Please have these comments included in the final environment statement along with our comments for the public meeting March 4.

Response: The following comments, identified by the lower-case letters, are the Louisiana Wildlife Federation, Inc.'s comments from the Informal Field Review and the Soil Conservation Service's responses to these comments:

- a. Comment: If the Water Bank Program is expanded, we hope the project Sponsors will make an effort to be included in the program as a means of continuing preservation of the wetland areas you wish to retain in the project area.

Response: The following information has been included in the work plan and environmental impact statement. The Water Bank Program was introduced in Morehouse Parish in 1972. Wetlands eligible are types 3, 4, and 5. Of the 1,250 acres of types 3 and 5 which exist in the watershed, 173 are enrolled in the program. The Morehouse Soil and Water Conservation District and the Agricultural Stabilization and Conservation Service County Committee have the responsibility for administering

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this program locally. They will continue trying to expand the program and encourage wetlands owners to enroll.

- b. Comment: If the development of camps and summer homes is anticipated along Bayou Bonne Idee, we hope the project Sponsors will request the Parish Police Jury to pass a sewerage ordinance to prevent pollution of the Bayou.

Response: No change in the work plan or environmental impact statement is necessary. The following sentence is already included in the work plan and environmental impact statement, "The local sponsoring organization will be responsible for providing the necessary ordinances required to protect the water quality in the Bayou from effluent and other contaminants due to build-up along the Bayou banks."

- c. Comment: We would like to see the postproject study expanded to include a determination of the extent to which advocated land treatment measures are carried out and the extent to which sedimentation in Boeuf River and Bayou Bonne Idee actually decreases or increases.

Response: No change in the work plan and environmental impact statement required. The monitoring program explained in the work plan and environmental impact statement can be supplemented at the proper time with the land treatment data to obtain changes in sedimentation.

- d. Comment: The environmental impact statement indicates that assistance will be given in "establishing about 35 commercial recreation enterprises" pertaining mostly to hunting on 10,000 acres. We'd like to see the final statement indicate whether these commercial recreation enterprises are expected to be in the form or lease of pay-by-the-day arrangements. We would also like to know what interest has been demonstrated in establishing commercial waterfowl hunting opportunities on the wetlands to be maintained.

Response: The following information was included in the work plan and environmental impact statement: "Fee arrangements will be according to owner preference. Although no interest has been shown in establishing commercial waterfowl hunting on

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the wetlands to be maintained, the opportunity exists."

- e. Comment: We would like to suggest that the project Sponsors provide a minimum of 30 days notice in advance of public meetings and an equal amount of time for comment on environmental impact statements. The letter to the Louisiana Wildlife Federation from the project Sponsors was dated February 23, only 11 days in advance of the meeting. Our receipt of the draft statement and work plan followed by a few days, allowing even less time for preparation and comment.

Response: No change needed in work plan and environmental impact statement.

Louisiana Department of Art, Historical, and Cultural Preservation

Comment: This office knows of no historic sites which would be affected by the proposed project.

Response: None.

LIST OF APPENDIXES

Appendix A - Comparison of Benefits and Costs for Structural Measures

Appendix B - Bibliography

Appendix C - Project Map

Appendix D - Figures

Figure 1 - Vegetative Limits, Channel Profile, and Cross Sections

Figure 2 - Water Control Structure-Type 1

Figure 3 - Recreation Facilities

Figure 4 - Grade Stabilization Structure

Figure 5 - Water Control Structure-Type 2

Figure 6 - Profile and Section - Bayou Bonne Idee Channel

Figure 7 - Typical - Pipe Drop Structure - Water Control Structure
-Type 3

Appendix E - Map on Status of Land Clearing

Appendix F - Letters of Comments Received on the Draft Environmental
Statement

Approved by

Alton Mangum
Alton Mangum
State Conservationist

Date October 11, 1974

APPENDIX A - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Bayou Bonne Idee Watershed, Louisiana

(Dollars)

Evaluation Unit	Average Annual Benefits ^{1/}				Average Annual Cost ^{2/}		Benefit : Cost Ratio
	Damage Reduction	More Intensive : Land Use	Drainage	Recreation	Secondary	Total	
I	56,700	11,800	53,700	-	24,200	146,400	4.5:1
II	174,500	36,900	166,300	-	72,900	450,600	5.4:1
III	10,900	2,000	8,800	-	6,000	27,700	2.3:1
IV	47,700	10,000	44,700	-	20,600	123,000	2.8:1
V	88,400	13,300	60,100	107,400	38,300	307,500	2.1:1
Project Administration	-	-	-	-	-	37,300	
GRAND TOTAL	378,200	74,000	333,600	107,400	162,000	1,055,200	3.0:1

^{1/} Price base 1973

^{2/} Based upon 5.5 percent discount rate applicable when the plan was developed. The benefit-cost ratio is 3.1 to 1 based on the discount rate of 5.625 percent and new prices of \$.75 to \$2.25 for days of recreation.

August 1973

APPENDIX B

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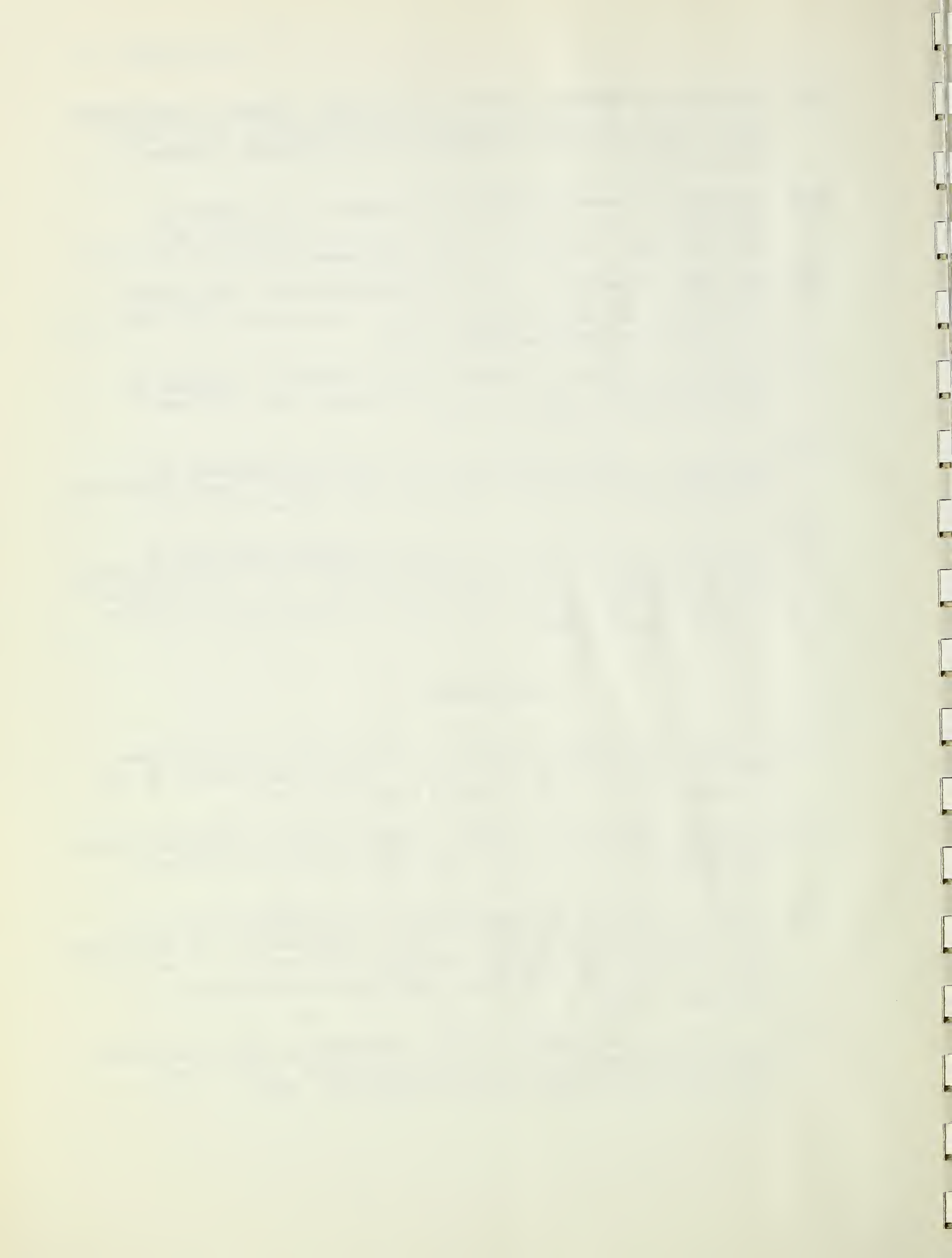
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2 240 000

2 300 000

91° 35'

ARKANSAS
LOUISIANAASHLEY CO
MOREHOUSE PARISH

840 000

840 000

91° 45'

32° 55'

32° 55'

165

Mer Rouge

Recreation Area

33

730 000

32° 40'

Ook Ridge

91° 45'

2 240 000



91° 35'

32° 40'

91° 35'

Figure 8

PROJECT MAP

BAYOU BONNE IDEE WATERSHED

MOREHOUSE PARISH, LOUISIANA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

0 1 2 3 4 5 6 7 8 9 10
APPROXIMATE SCALE
1:158,400 = 1" = 1 MILE

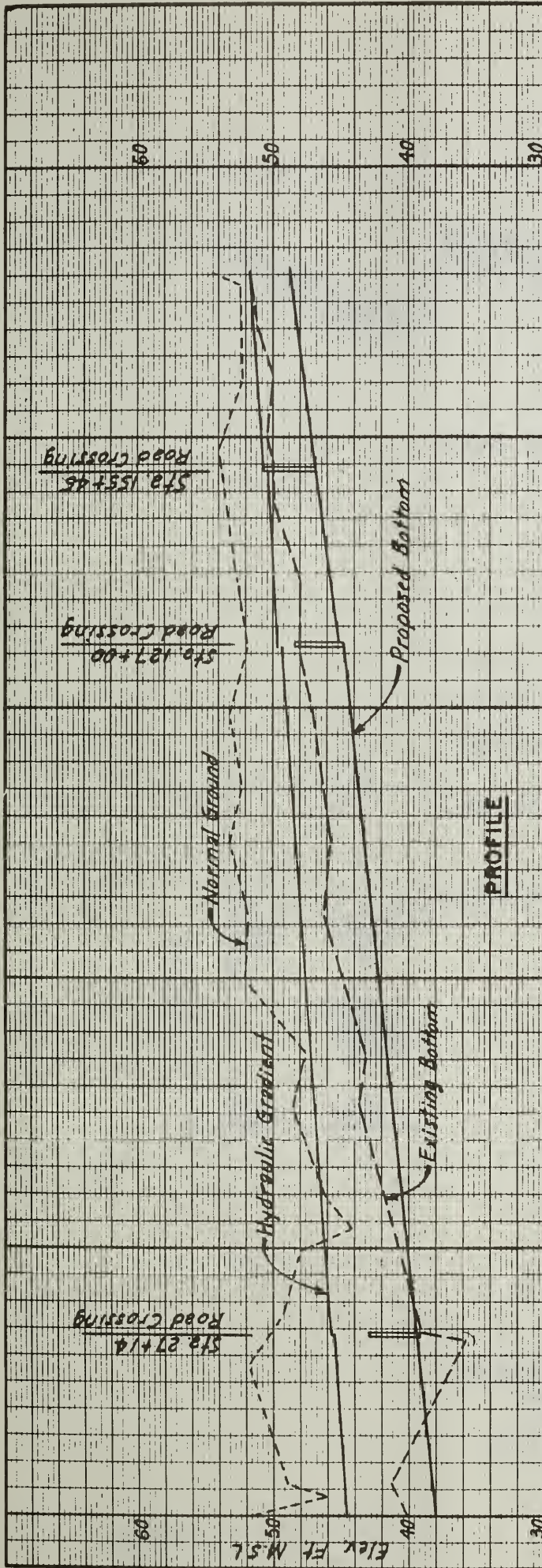
Base compiled from USGS Quadrangle sheets (polyconic projection) and latest General Highway Maps. All planimetric features, latitude, longitude and state coordinates taken from these sources.

Nov. 1971 Rev. 1974 4-R-31,038

LEGEND

- State Highway
- U.S. Highway
- Parish Road
- State Line
- Parish Boundary
- Towns
- Railroad
- Pipeline
- Power Line
- Watershed Boundary
- Multipurpose Channels to be improved
- Adequate Channels
- Water Control Structure Type I
- Morehouse Parish School Board Property Public Use Area
- Benefited Area
- Wetland Area (More than 80 Acres)
- Grade Stabilization Structure
- Evolution Unit Boundary II
- Boat Launch

APPENDIX D - FIGURES



PROFILE

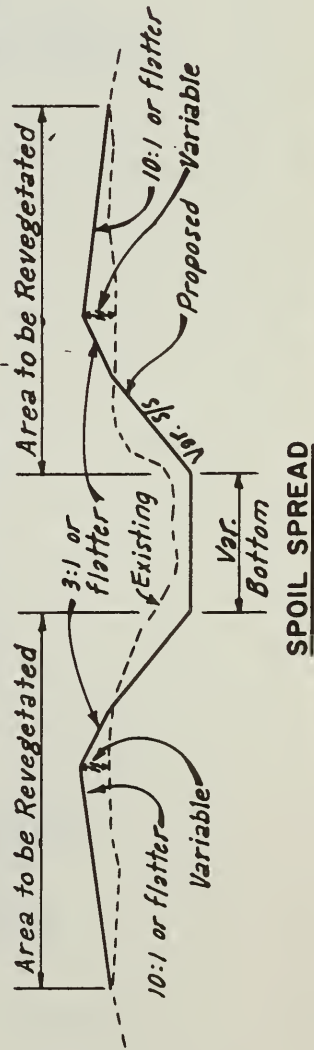
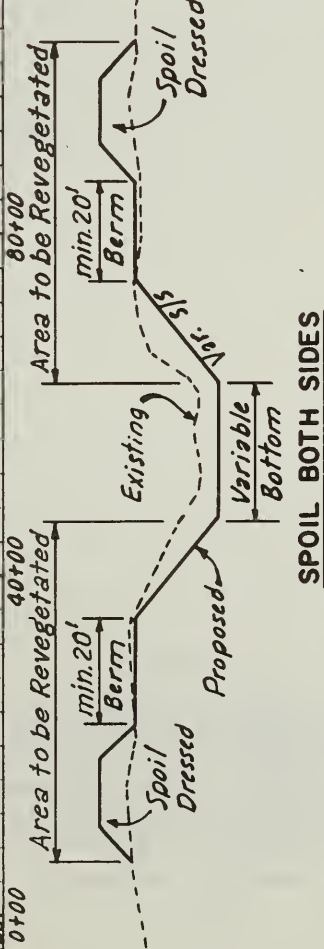
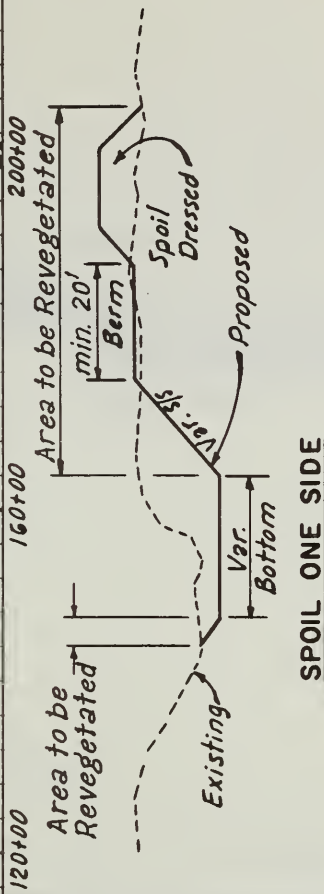
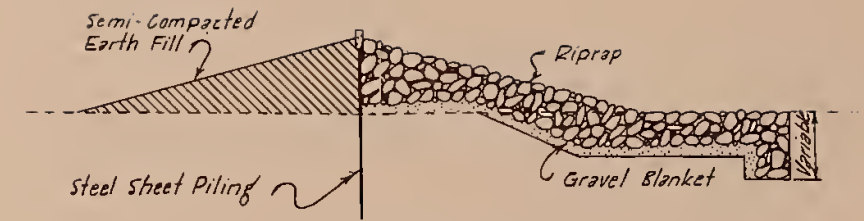
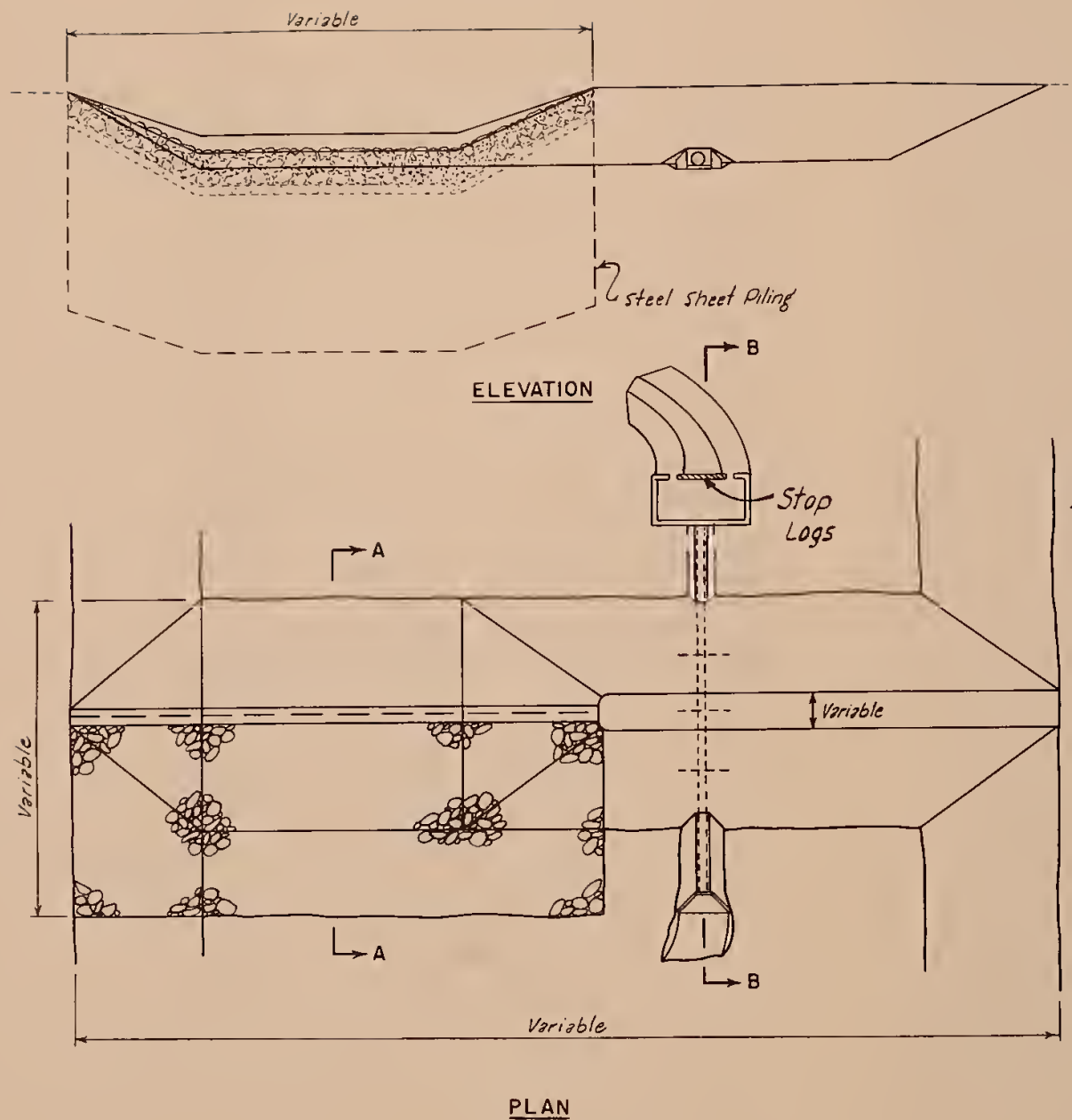
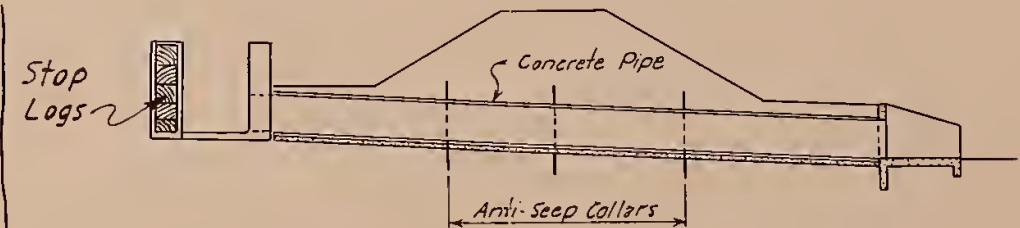


Figure 1

AREA TO BE REVEGETATED
CHANNEL PROFILE AND CROSS SECTIONS
BAYOU BONNE IDEE WATERSHED
MOREHOUSE PARISH, LOUISIANA
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA



SECTION A-A



SECTION B-B

FIGURE 2
TYPICAL PLAN
WATER CONTROL STRUCTURE TYPE I
BAYOU BONNE IDEE WATERSHED
MOREHOUSE PARISH, LOUISIANA
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

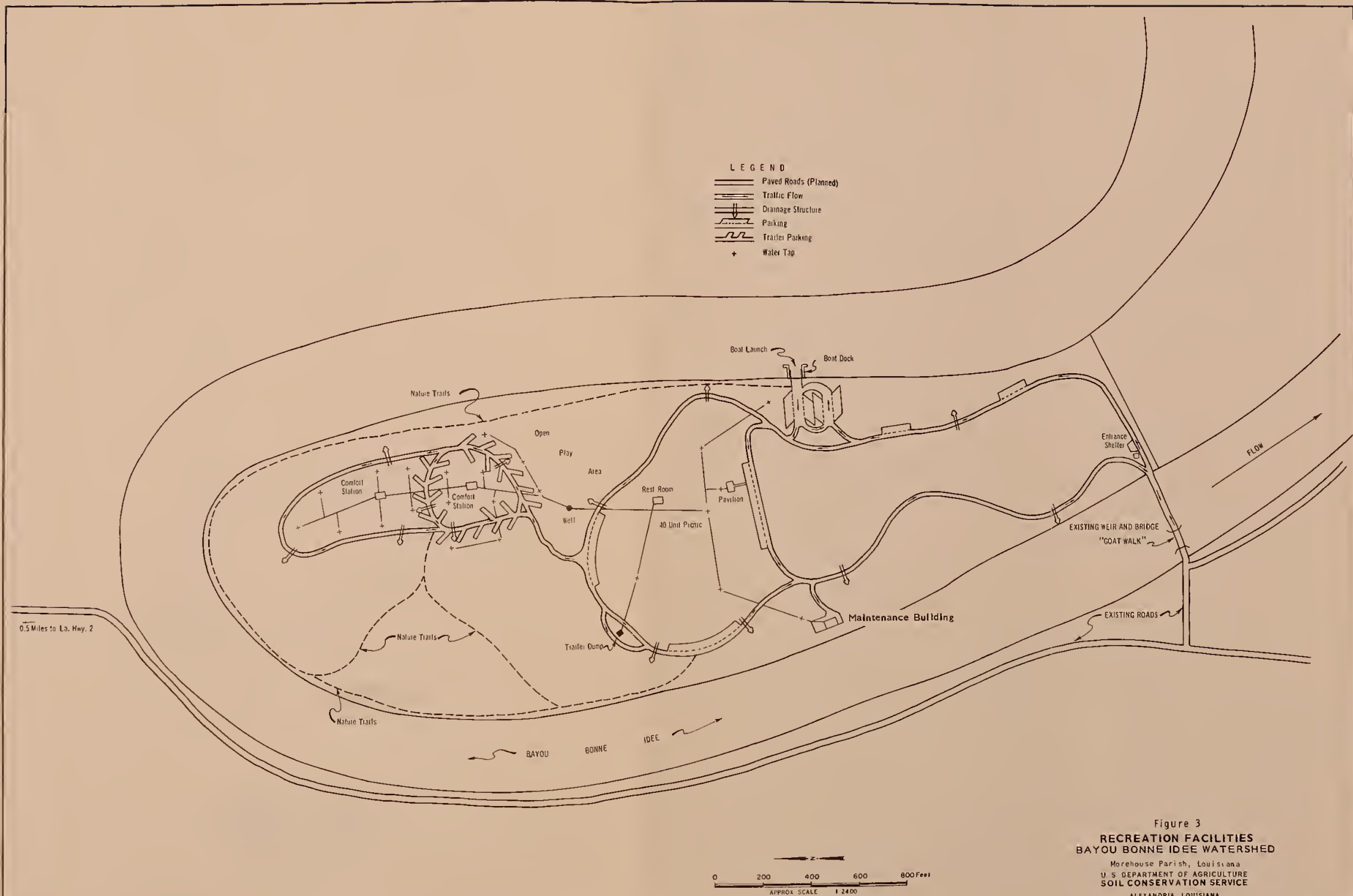


Figure 3
RECREATION FACILITIES
BAYOU BONNE IDEE WATERSHED
 Morehouse Parish, Louisiana
 U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 ALEXANDRIA, LOUISIANA

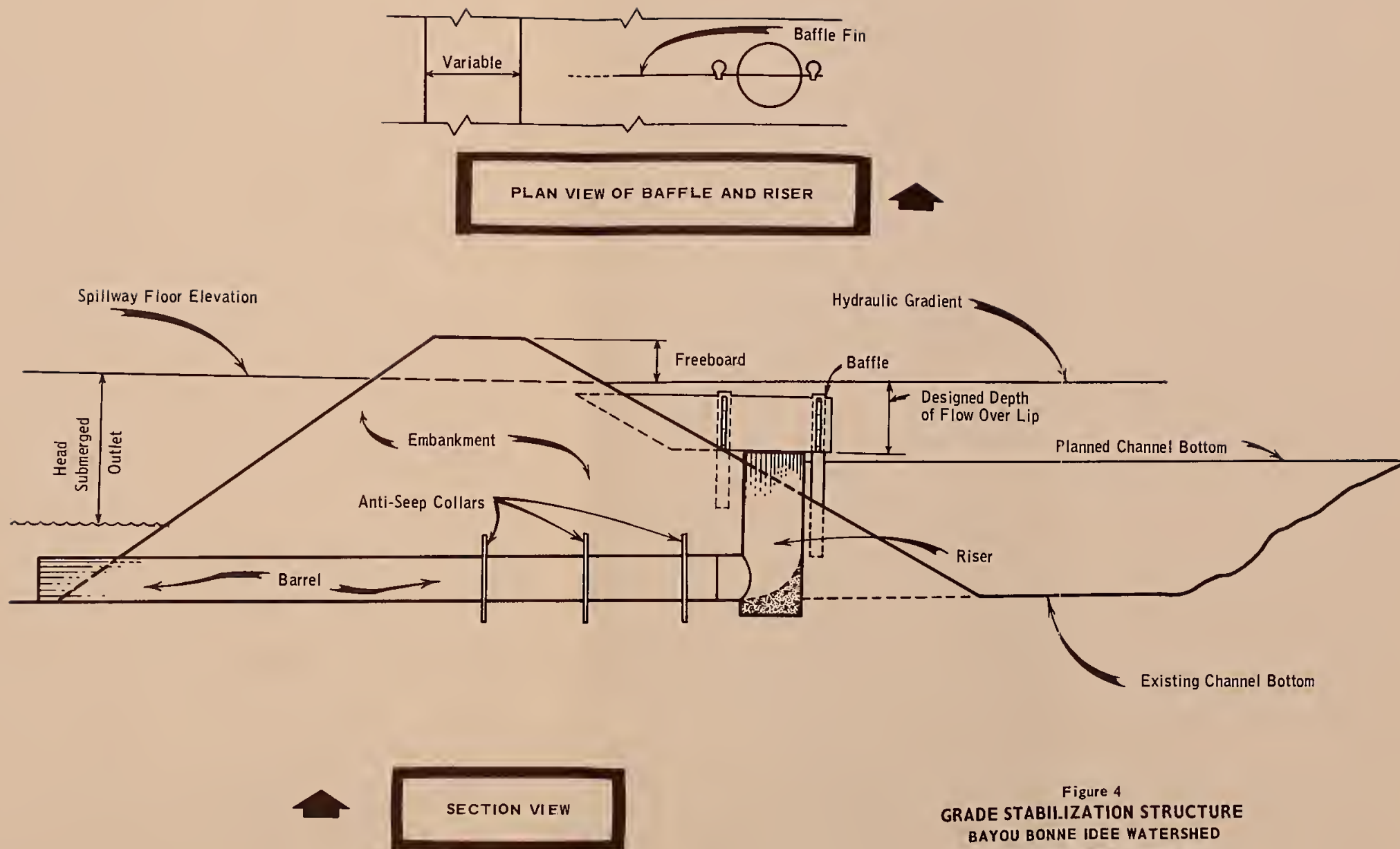
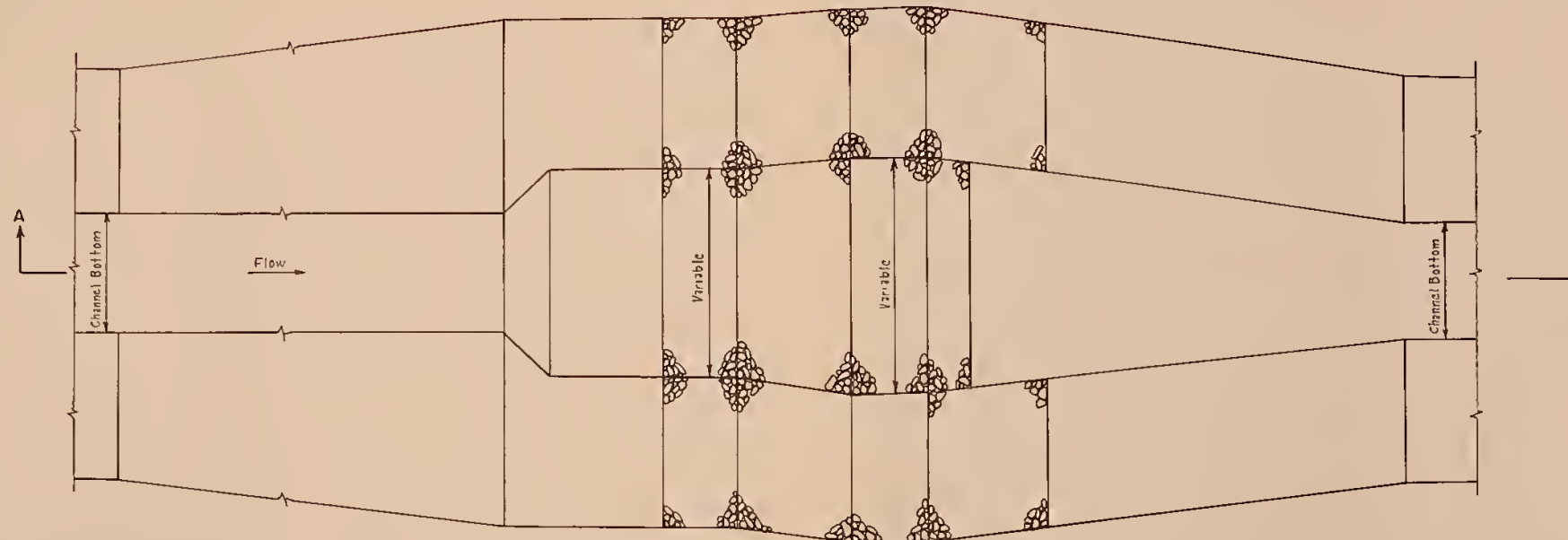


Figure 4
GRADE STABILIZATION STRUCTURE
 BAYOU BONNE IDEE WATERSHED
 MOREHOUSE PARISH, LOUISIANA

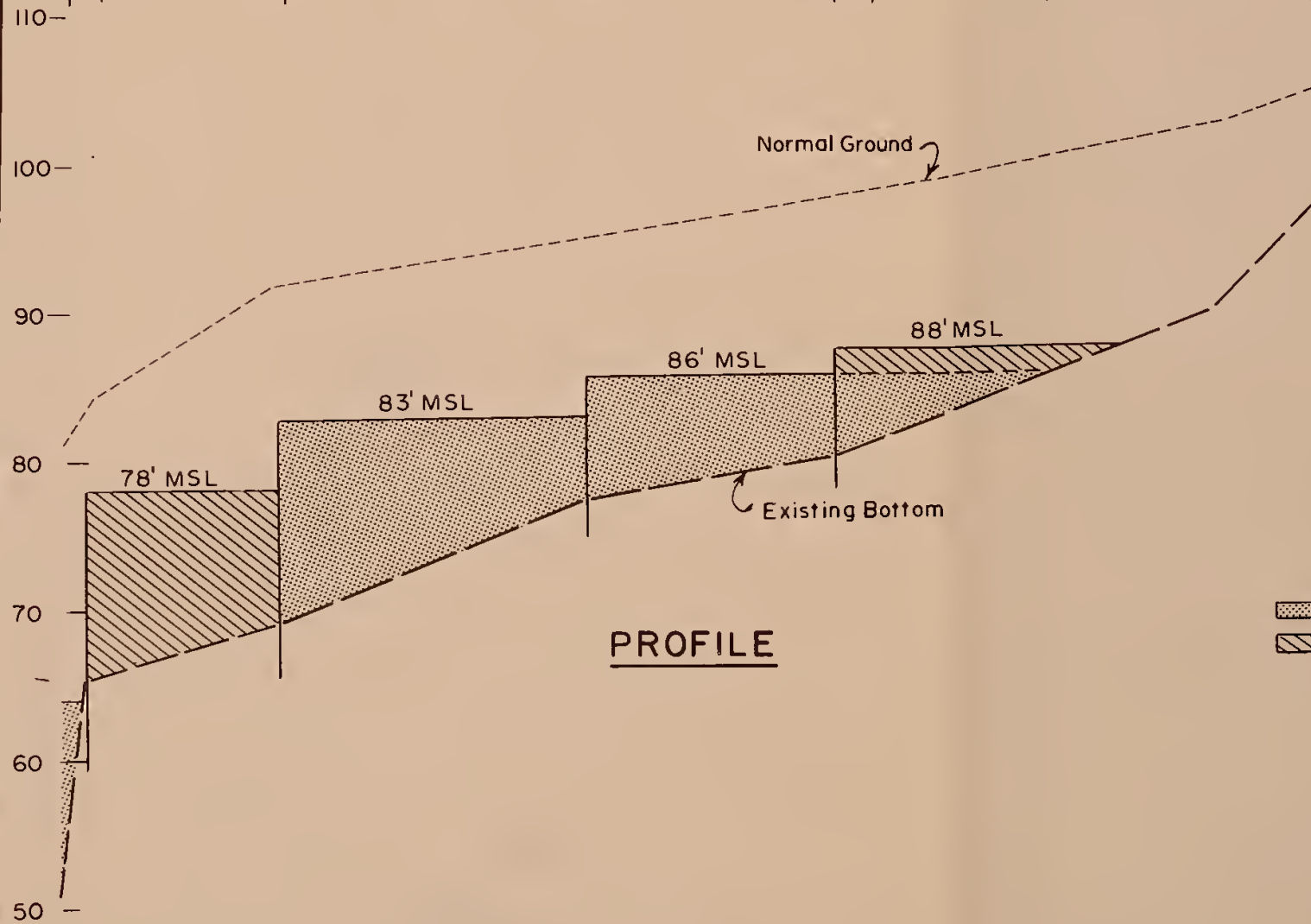


SECTION A-A

FIGURE 5
TYPICAL PLAN
WATER CONTROL STRUCTURE TYPE 2
BAYOU BONNE IDEE WATERSHED
MOREHOUSE PARISH, LOUISIANA
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

0+00 1000+00 2000+00 3000+00 4000+00

Boeuf River Structure No. 1
Structure No. 2
Horseshoe Road
Structure No. 3
La. Hwy. No. 2
Structure No. 4
Cherry Hill Ch. 2
La. Hwy. 832
U.S. Hwy. 165
End Survey



PROFILE

LEGEND

EXISTING WATER
PLANNED WATER

TYPICAL SECTION

FIGURE 6
PROFILE AND SECTION
BAYOU BONNE IDEE
BAYOU BONNE IDEE WATERSHED
MOREHOUSE PARISH, LOUISIANA
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ALEXANDRIA, LOUISIANA

Rev. 3-74 4-E-32,860

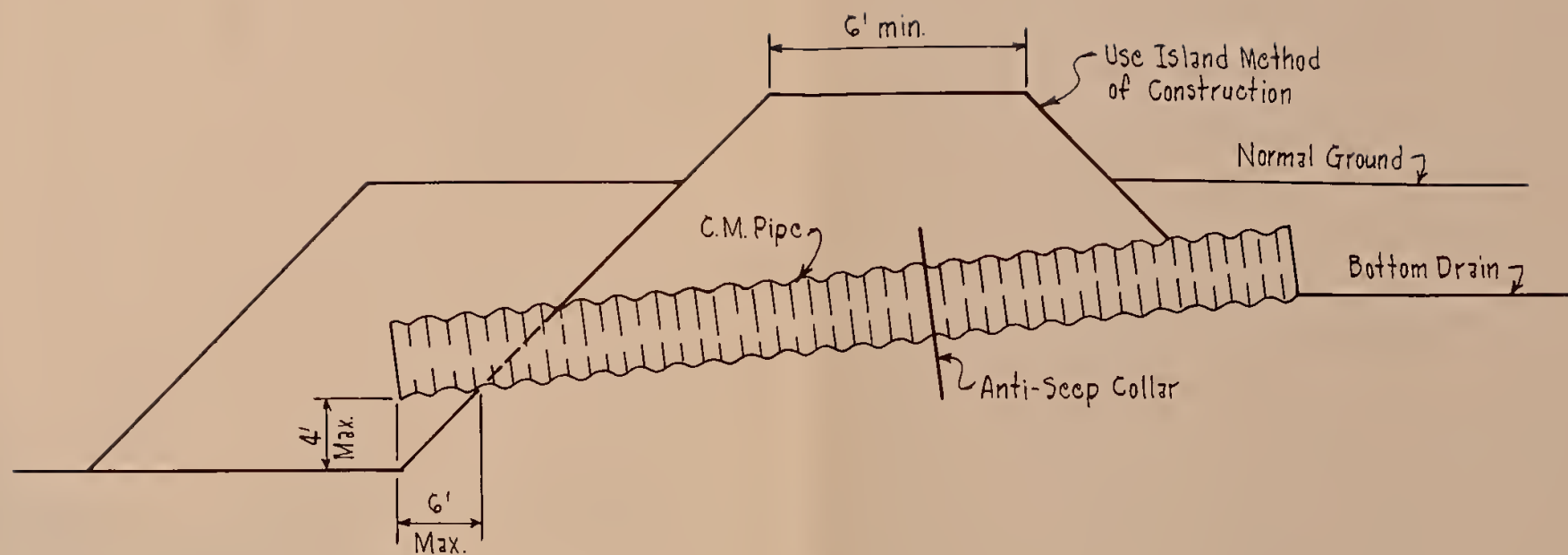


FIGURE 7
 TYPICAL PIPE DROP STRUCTURE
 WATER CONTROL STRUCTURE TYPE 3
 BAYOU BONNE IDEE WATERSHED
 MOREHOUSE PARISH, LOUISIANA
 U. S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE
 ALEXANDRIA, LOUISIANA

2 240 000

2 300 000

91° 35'

840 000

840 000

32° 55'

32° 55'

165

Mer Rouge

Recreation Area

133

730 000

32° 40'

Oak Ridge

91° 45'

2 240 000



91° 35'



32° 40'

730 000

LEGEND

- State Highway
- U.S. Highway
- Parish Road
- State Line
- Parish Boundary
- Towns
- Railroad
- Pipeline
- Power Line
- Watershed Boundary
- Multipurpose Channels to be Improved
- Adequate Channels
- Forest Land 1972
- Forest Land Cleared Between 1960 and 1972
- Openland 1960

APPENDIX E

STATUS OF LAND CLEARING
BAYOU BONNE IDEE WATERSHED
MOREHOUSE PARISH
LOUISIANA

0 1 2 3 4
APPROXIMATE SCALE - MILES

Polyconic Projection compiled at 1:62,500 (1.014 inches equal 1 mile) and reproduced at 1:158,400 (0.4 inches equal 1 mile).

Base compiled from USGS Quadrangle sheets and General Highway Map, 1971 Revision, Louisiana State Highway Dept. and USDC, Bureau of Public Roads.

JULY 1974

4-R-34152

APPENDIX F

Letters of Comments Received on the Draft Environmental Statement



DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS

P. O. BOX 60

VICKSBURG, MISSISSIPPI 39180

REPLY TO
ATTENTION OF:

LMKED-PQ/LMKED-PP

28 May 1974

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
P. O. Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

I refer to your letter of 6 May furnishing a copy of the draft environmental impact statement for Bayou Bonne Idee Watershed, Louisiana.

The draft environmental impact statement appears to be adequate and we have no comments to offer.

I appreciate the opportunity to review this EIS.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Marvin W. Rees", is written above the typed name.

MARVIN W. REES
Colonel, CE
District Engineer



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

REGIONAL OFFICE

1114 COMMERCE STREET
DALLAS, TEXAS 75202

June 20, 1974

OFFICE OF
THE REGIONAL DIRECTOR

Our Reference: EI # 0574-350

Mr. Kenneth E. Grant, Administrator
U. S. Department of Agriculture
Soil Conservation Service
Washington, D.C. 20250

Dear Mr. Grant:

Re: Bayou Bonne Idee Watershed, La.

Pursuant to your request, we have reviewed the Environmental Impact Statement for the above project proposal in accordance with Section 102(2)(C) of P. L. 91-190, and the Council on Environmental Quality Guidelines of April 23, 1971.

Environmental health program responsibilities and standards of the Department of Health, Education, and Welfare include those vested with the United States Public Health Service and the Facilities Engineering and Construction Agency. The U. S. Public Health Service has those programs of the Federal Food and Drug Administration, which include the National Institute of Occupational Safety and Health and the Bureau of Community Environmental Management (housing, injury control, recreational health and insect and rodent control).

Accordingly, our review of the Draft Environmental Statement for the project discerns no adverse health effects that might be of significance where our program responsibilities and standards pertain, provided that appropriate guides are followed in concert with State, County, and local environmental health laws and regulations.

We therefore have no objection to the authorization of this project insofar as our interests and responsibilities are concerned.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Wm. F. Crawford". The signature is fluid and cursive, with a large loop at the end.

William F. Crawford
Environmental Impact Coordinator

2 cc to Warren Muir
1 cc to Phyllis Hayes

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Reaction Review and Comments on Environmental Impact Statement for Project Proposal:

Draft Environmental Impact Statement Reviewed With Objections

☐

Draft Environmental Impact Statement Reviewed With No Objections

☒

Date: June 14, 1974

EI# 0574-350

Agency/Bureau: DHEW, PHS

Project Proposal: Bayou Bonne Idee Watershed, Louisiana

Comments: Pursuant to Section 102(2)(f) of Public Law 91-190, we have reviewed this project proposal and find no indication of adverse environmental health impact where our program standards and responsibilities are concerned.



United States Department of the Interior

GEOLOGICAL SURVEY
Water Resources Division
P.O. Box 66492
Baton Rouge, Louisiana 70806

June 7, 1974

Mr. Alton Mangum
State Conservationist
U.S. Soil Conservation Service
P.O. Box 1630
Alexandria, Louisiana 71301

Gentlemen:


Our official response on the draft, environmental impact statement for Bayou Bonne Idee Watershed has been submitted to Geological Survey headquarters, as per a request from the Department of the Interior. Our response indicated the draft "to be reasonably adequate and accurate in its evaluation of the environmental impact with relation to hydrology."

Sincerely yours,

John J. Musser
Acting District Chief

cc:
G. H. Davis, WRD
Reston, Virginia

Regional Hydrologist, CR
Lakewood, Colorado



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER-74/583

JUN 24 1974

Dear Mr. Grant:

Thank you for the letter of April 22, 1974, requesting our views and comments on a work plan and draft environmental statement for the Bayou Bonne Idee Watershed, Morehouse Parish, Louisiana.


We have completed our review of these two documents and submit the following comments for your consideration and use.

Work Plan

Our review of the work plan did not surface any conflicts with the programs or missions of this Department. Accordingly, we have no objection to the processing of this report to the Congress.

We note that natural gas and petroleum are the only mineral commodities presently produced in Morehouse Parish. The proposed project would not preclude exploration for or extraction of these resources. If pipeline modifications and relocations are implemented as indicated on pages 75 and 84 of the work plan and on page 17 of the draft statement, the project will have virtually no adverse effect on mineral resources. However, we believe the statements on page 16 (line 21) of the work plan and page 57 (line 31) of the draft statement that there are no mineral deposits in the watershed may not be entirely correct. We suggest using the term "no known mineral deposits."

There is no mention in either the work plan or the impact statement of the concrete, sand and gravel that will be required for construction of the proposal. These resource commitments will be irretrievable and should be so noted in the work plan and draft statement.



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455 FIFTH AVENUE
NEW YORK 17, N. Y.

1917

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JAN 10 1917
LIBRARY

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ASTOR LENOX TILDEN FOUNDATION
455 FIFTH AVENUE
NEW YORK 17, N. Y.

RECEIVED
JAN 10 1917
LIBRARY

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455 FIFTH AVENUE
NEW YORK 17, N. Y.

RECEIVED
JAN 10 1917
LIBRARY

The proposed action will not adversely affect any existing, proposed or known potential unit of the National Park System or any known historic, natural, or environmental education sites eligible for the National Landmark Programs.

Environmental Statement

Page 22, paragraph 2 - It is stated that a letter from the Curator of Anthropology contained information on archeological sites. What institution is the curator associated with? A mere records check such as is indicated is inadequate. A professional archeologist should survey the project area and the final statement should contain information on sites to be affected, including location, type, and significance. If archeological sites or materials will be affected, there should be information on mitigating measures to be undertaken.

In the interest of improving the accuracy of the statement, two minor discrepancies on page 53 should be corrected. The eastern glass lizard referred to occurs only in extreme southeastern Louisiana. However, the western slender glass lizard is common in the project area. Also, the red-cockaded woodpecker should be listed with the southern bald eagle and Bachman's warbler as an endangered species.

Page 74, the section entitled Recreation Problems - The source of recreation demand, supply, and need data given in this section should be cited.

Page 74, paragraph 1, lines 4 and 7 - "Recreational needs" should be changed to "recreational demands." The most commonly used terminology is that recreation demand minus recreation supply equals recreation needs.

Page 92, the section entitled Fish and Wildlife, and Recreation - General recreation activities related to the natural stream and displaced by the project should be discussed. These activities may include canoeing, boating, picnicking, hiking, or any other activity more suited to the natural stream condition.



Page 99, paragraph 3, sentence 1 - Clarification is needed relative to whether this statement concerning aesthetic appearance applies to the entire project or portions of it. Channelization projects such as this one are often considered to have an adverse aesthetic impact due to their alteration of the natural character of streams.

Page 115 - Should the project construction phase encounter archeological materials, this will result in an irreversible and irretrievable commitment of such resources, even if salvage excavations are accomplished.

We trust the foregoing comments will assist you in processing this report to the Congress.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Anthony R. Adams". The signature is fluid and cursive, with a large initial "A" and "R".

Deputy Assistant Secretary of the Interior

Mr. Kenneth E. Grant
Administrator
Soil Conservation Service
U.S. Department of Agriculture
Washington, D. C. 20250

Alton Mangum, SCS, Alexandria, Louisiana
Deputy Administrator for
Water Resources



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS:
U. S. COAST GUARD (C-WS/70)
400 SEVENTH STREET S.W.
WASHINGTON, D. C. 20500
PHONE: (202) 426-2262

• JUN 26 1974

Mr. Kenneth E. Grant
Administrator
Soil Conservation Service
Washington, D. C. 20250

Dear Mr. Grant:

This is in response to your letter of 22 April 1974 addressed to Admiral Bender concerning the draft environmental impact statement for the Bayou Bonne Idee Watershed project, Morehouse Parrish, Louisiana.

The Department of Transportation has reviewed the material submitted. We have no comments to offer nor do we have any objection to the project.

The opportunity to review this draft statement is appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "R. I. Price", is written over a horizontal line.

R. I. PRICE
Rear Admiral, U. S. Coast Guard
Chief, Office of Marine Environment
and Systems

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI
1600 PATTERSON, SUITE 1100
DALLAS, TEXAS 75201

June 24, 1974

Mr. Kenneth E. Grant
U. S. Department of Agriculture
Soil Conservation Service
Washington, D. C. 20250

Dear Mr. Grant:

We have reviewed the Draft Environmental Impact Statement, Bayou Bonne Idee Watershed, Morehouse Parish, Louisiana. The proposed project includes provisions for structural measures designed to reduce flood damage and improve land drainage. Other provisions include land treatment and recreation development. Channel enlargement and/or clearing will be conducted on 202 miles of channel. Of this total, 166 miles are man-made, 15 miles are non-existent, and 21 miles are classified as unmodified. An existing 45 miles of ponded water will be increased to 55 miles after the installation of water control structures.

In general, the draft statement discusses many details of the proposed project and their environmental effects. However, the following comments are offered for your consideration in finalizing the statement:

1. Recreation development for the proposed project includes the construction of two new water control structures and the modification of two existing structures. These structures will add ten miles of permanent water to the present system. According to the draft statement, the increase in water area, improved aesthetic appearance, and higher quality of water may lead to the development of summer houses and camps along the banks of the bayou. The development of this area could result in the degradation of existing water quality. Septic tanks improperly maintained could contribute leached effluent to the waterway, possibly causing unsightly algal blooms and unsanitary conditions. Also, the construction of housing facilities could increase the amount of sediment entering the bayou from erosion. While the responsibility for providing safeguards to protect water quality in the bayou rests with the sponsor, we believe the statement should outline possible mitigative measures that could be used to control water pollution

during project construction and maintenance.

2. The proposed project includes selective clearing and some one-side-only channel excavation for certain sections of the Bayou Bonne Idee watershed. However, the draft project map depicts the location of these actions from a general standpoint. The inclusion of a project map depicting the exact location of the various required actions would be helpful in explaining the proposed plan.

3. Operation and maintenance at the proposed project site will include the use of certain herbicides. We suggest that the final statement include a list of pesticides or any toxic material that might be utilized at the site during or after construction. Assurances should also be given that only EPA registered pesticides will be used, and applied in a manner consistent with their labeling.

4. Sanitary facilities at the proposed recreation site will include pit-toilets, flush toilets and septic tanks. These facilities will require continuous maintenance in order to insure that they function properly. The final statement should include a discussion of the disposal methods that will be used in maintaining the pit-toilets. Additional information identifying the location of the septic tank disposal field in relation to the bayou or any potable water supply, and an approximation of wastes to be treated would strengthen the final statement.

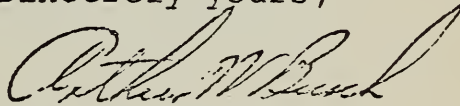
5. The final statement should contain an assurance that every available means will be used to keep air, water and noise pollution at a minimum during construction. We believe a discussion of the procedures to be utilized at the various construction sites would strengthen the statement.

These comments classify your Draft Environmental Impact Statement as LO-2. Specifically, we have no objection to the proposed project. However, additional information is needed for evaluating the long-term impacts on water quality. The classification and the date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the attachment. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and on the adequacy of the impact statement at the draft stage, whenever possible.

We appreciate the opportunity to review the Draft Environmental Impact Statement and we will be happy to discuss our comments with you. Please send us two copies of the Final Environmental Impact Statement at the same time it is sent to the Council on Environmental Quality.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Arthur W. Busch". The signature is fluid and cursive, with a large initial "A" and a long, sweeping underline.

Arthur W. Busch
Regional Administrator

Enclosure

1. The first part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business or organization. The author provides several examples of how poor record-keeping can lead to financial loss and legal complications.

2. The second part of the paper focuses on the various methods used to collect and analyze data. It compares different statistical techniques and discusses their strengths and weaknesses. The author also provides a detailed explanation of how to interpret the results of a statistical analysis.

3. The third part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business or organization. The author provides several examples of how poor record-keeping can lead to financial loss and legal complications.

4. The fourth part of the paper focuses on the various methods used to collect and analyze data. It compares different statistical techniques and discusses their strengths and weaknesses. The author also provides a detailed explanation of how to interpret the results of a statistical analysis.

ENVIRONMENTAL IMPACT OF THE ACTION

10 - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

11 - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects.

12 - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

ADEQUACY OF THE IMPACT STATEMENT

Category 1 - Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not currently exist on which to make such a determination.



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CHARLEY S. STAPLES
Executive Director

LOUISIANA STATE UNIVERSITY
P. O. DRAWER CS
Telephone 389-5017
BATON ROUGE, LOUISIANA 70803

April 29, 1974

Mr. Kenneth E. Grant, Administrator
Soil Conservation Service
U. S. Department of Agriculture
Washington, D.C. 20250

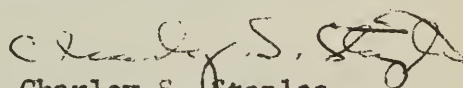
Dear Mr. Grant:

Your letter of April 23, 1974, transmitting a copy of the work plan and environmental statement for the Bayou Bonne Idee Watershed, has been received.

We have reviewed this material and we think we have a good project. The State Committee supports this project and has no additional comments to make.

If we can be of further assistance to you, please let us know.

Sincerely,


Charley S. Staples
Executive Director

CSS/vj

cc: Richard S. Thompson
bc: Alton Mangum



STATE OF LOUISIANA

COMMISSION ON INTERGOVERNMENTAL RELATIONS

EDWIN EDWARDS

GOVERNOR

SENATOR MICHAEL H. O'KEEFE

CHAIRMAN

LEON TARVER

EXECUTIVE DIRECTOR

May 8, 1974

Mr. Alton Mangum
State Conservationist
U. S. Department of Agriculture
Soil Conservation Service
P. O. Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

The Draft Environmental Statement of the Bayou Bonne Idee Watershed Project has been reviewed by our office to determine which agencies would be interested in the contents of the environmental statement.

It was noted that the Louisiana Department of Public Works, and the Louisiana Wildlife and Fisheries Commission participated in the development of the statement. Since the project also involves the development of recreational resources and facilities in the Bayou Bonne Idee area, copies of the environmental statement have been forwarded to the Louisiana State Parks and Recreation Commission for review and comment. Comments from the Recreation Commission will be forwarded directly to your office.

This should fulfill the requirements of the State Clearinghouse as imposed by Part II of OMB Circular A-95.

If we can be of any further assistance to you, please feel free to contact this office.

Sincerely,

William J. Gallegos
State Clearinghouse Director

WJG:RA/se

cc. Mr. Gilbert C. LaGasse

HOUSE COMMITTEE

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STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS

P. O. BOX 44245, CAPITOL STATION
BATON ROUGE, LA. 70804

IN REPLY PLEASE REFER TO
FILE NO.

June 3, 1974

Mr. Alton Mangum
United States Department of Agriculture
Soil Conservation Service
P. O. Box 1630
Alexandria, LA 71301

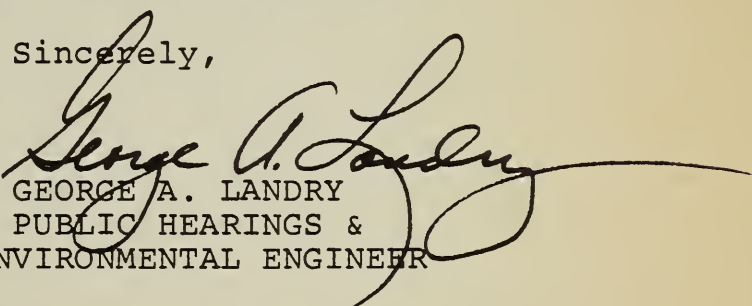
Dear Mr. Mangum:

Your Draft Environmental Impact Statement for Bayou
Bonne Idee Watershed of March 1974 has been reviewed by
this office.

Comments on any possible effects this project may
have on state highways located within the proposed
project site should be clarified.

Thank you for your time and consideration.

Sincerely,


GEORGE A. LANDRY
PUBLIC HEARINGS &
ENVIRONMENTAL ENGINEER

GAL/JTL/lgl

cc: Mr. W. H. Taylor, Jr.



Y AGUILLARD
DIRECTOR

State of Louisiana
DEPARTMENT OF PUBLIC WORKS
P. O. BOX 44155, CAPITOL STATION
BATON ROUGE, LOUISIANA 70804

BOARD OF PUBLIC WORKS
GEORGE CHANEY, CHAIRMAN
EMMETT A. EYMARD.
P. P. VERRETT, SR.
RICHARD P. GIBSON
ROLAND CARTER

June 10, 1974

Mr. Alton Mangum
State Conservationist
United States Department of
Agriculture
Soil Conservation Service
Post Office Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

Enclosed with your letter of May 6, 1974, was a draft Environmental Impact Statement for the Bayou Bonne Idee Watershed, Louisiana. You requested our review and comments on this draft statement for inclusion in the final report.

We have completed reviewing the draft statement for this watershed project and find it to be most comprehensive in regard to the proposed watershed development program. The several features of this project will consist of the development of this area. Comments furnished your office by letter of February 28, 1974, pertaining to the preliminary draft of this Environmental Impact Statement are still pertinent. It is requested that you consider these comments in development of your project plans and specifications.

We appreciate the opportunity to review and comment on your proposed statement for this watershed project.

Sincerely yours,

Roy Aguiard
ROY AGUILLARD
DIRECTOR

ART/cdh



State of Louisiana

DEPARTMENT OF PUBLIC WORKS

P. O. BOX 44155, CAPITOL STATION
BATON ROUGE, LOUISIANA 70804

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ROLAND CARTER

Y AGUILLARD
DIRECTOR

February 28, 1974

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
U.S. Department of Agriculture
Post Office Box 1630
Alexandria, Louisiana - 71301

Dear Mr. Mangum:

The preliminary draft of the Soil Conservation Service work plan and environmental impact statement for the Bayou Bonne Idee Watershed have been received in this office. We have completed our review of these preliminary drafts as requested in your letter of February 15, 1974.

We find that these documents are most comprehensive and complete in regard to the watershed development. The proposed method of water management and recreational features will enhance development of this entire area. We also believe the recreational aspects will be of benefit to the surrounding parishes in addition to the immediate watershed area. In reviewing the project work plan, there are several aspects which we would like to discuss with your office prior to finalization of project plans. These areas of discussion would be in reference to the proposed use of stoplogs for the Type 1 structures and also to the average depth of water above Water Control Structure No. 4.

We will have a representative present at the meeting to be held on Monday, March 4, 1974 in Bastrop, Louisiana.

Mr. Alton Mangum, State Conservationist
February 28, 1974
Page 2

We appreciate the opportunity to review your
statements and to participate in this meeting.

Very truly yours,


ROY AGUIARD
DIRECTOR

ART:dz

cc: Mr. Clint E. Shepard, Chairman
Morehouse Soil & Water Conservation District
609 East Madison Street
Bastrop, Louisiana - 71220

cc: Mr. Abner Wimberly, Chairman
Bonne Idee Gravity Drainage District
Courthouse Building
Bastrop, Louisiana - 71220

cc: Mr. Harry Fox, President
Morehouse Parish School Board
714 South Washington Street
Bastrop, Louisiana - 71220



STATE OF LOUISIANA

Department of Art, Historical and Cultural Preservation

OLD STATE CAPITOL, BATON ROUGE, LOUISIANA 70801

EDWIN EDWARDS
GOVERNOR

July 2, 1974

JAY R. BROUSSARD
DIRECTOR

Mr. Alton Mangum
State Conservationist
Soil Conservation Service
P. O. Box 1630
Alexandria, Louisiana 71301

Dear Mr. Mangum:

RE: Bayou Bonne Idee Watershed

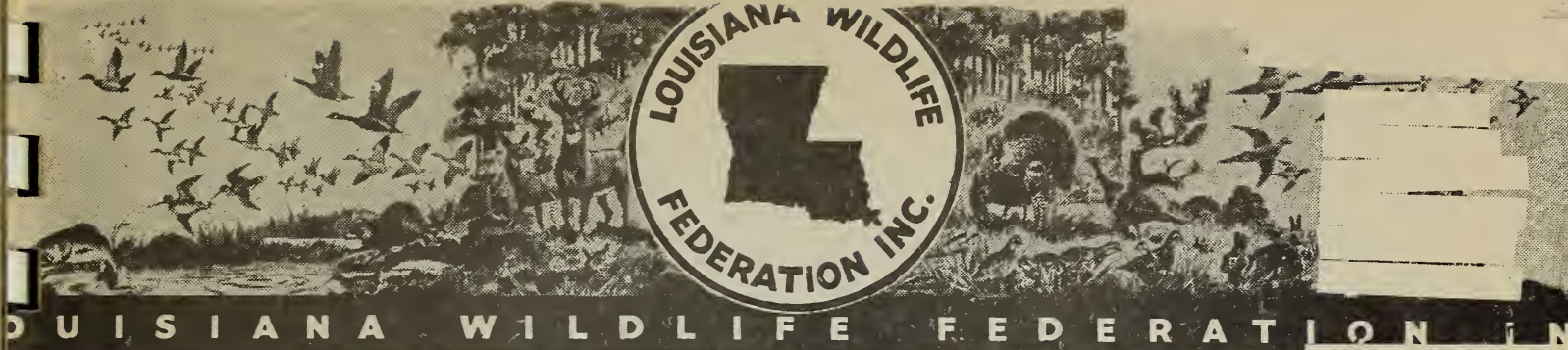
This office knows of no historic sites which would be effected by the proposed project.

Thank you for the opportunity for comment on this project.

Sincerely,

Jay R. Broussard
State Historic Preservation Officer
Director, Department of Art, Historical
and Cultural Preservation

JB/bc



AFFILIATED WITH THE
NATIONAL WILDLIFE FEDERATION
1412 SIXTEENTH ST., N.W.
WASHINGTON 6, D. C. 20036

P. O. Box 5552
Alexandria, La. 71301
June 5, 1974

Mr. Alton Mangum
State Conservationist
U. S. Soil Conservation Service
P. O. Box 1630
Alexandria, La. 71301

Re: Draft Environmental Impact Statement Bonne Idee Watershed Project

Dear Mr. Mangum:

We appreciate the opportunity to comment on the draft environmental statement for this project. As stated previously, we find the statement to be comprehensive and basically accurate. Therefore, our comments will be confined to two major points: (1) the proposed land treatment program and (2) the extent to which proposed project drainage ditches will traversethe small acreage presently still in hardwood timber.

The statement accurately reflects the condition of the Boeuf River and existing channels within the project area due to channel modification and intensive farming: "Boeuf River has previously been modified. It carries a high sediment load and the water is constantly turbid. Water quality is poor due to turbid water conditions and lack of channel and bank cover. It does not contain a high fishery resource. . . Water quality in the channels is also poor. Channels with ponded water and intermittent flows are currently turbid due to the intensively farmed drainage area and backwater from the Boeuf River (p. 43)"

The statement further predicts that installation of the recommended land treatment measures will help resolve this situation by achieving a roughly one-third reduction in sheet erosion and 18 per cent reduction in sediment (p. 81). Therefore, assurances that land treatment measures will be carried out are of the utmost importance on this and other projects if the small watershed program is to improve rather than accelerate sedimentation and water quality problems. Success in reducing sedimentation and turbidity will certainly require more than the presently completed planning on 68 per cent of the project area and the 26 per cent of needed measure applied.

What data can the Soil Conservation Service include in the environmental impact statement concerning the extent to which recommended land treatment measures have been installed on previously completed

watershed projects and the extent to which these measures have resulted in a reduction in sedimentation?

We understand the North Tensas watershed project was the first completed in the Louisiana delta. It has also been reported that Lake St. Joseph becomes excessively turbid following heavy rainfall in the vicinity of project installed channels. What data does your agency have concerning the extent to which recommended land treatment measures have been installed and the extent to which sedimentation has been reduced on the North Tensas watershed project?

On page 69 of the statement is the following comment: "If good drainage was provided, the farmers would be more apt to maintain a good soil cover in winter because they would have more time for seed bed preparation in the spring." We agree that maintaining cover on croplands over the winter months would aid materially in reducing sheet erosion.

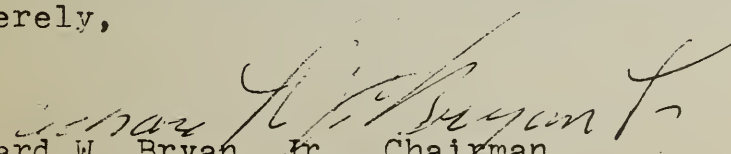
What data does your agency have concerning the extent to which landowners in the North Tensas watershed project have foregone fall land preparation since installation of project measures? Probably your agency could obtain data on this question from some of the outstanding farmers in the area. Mr. George Bagley, who is nationally prominent in the National Association of Soil and Water Conservation Districts and certainly a model farmer, is one person who comes to mind immediately.

In addition, we believe the Soil Conservation Service should make provisions to periodically report to the public, on a basis of every five or so years, the extent (as a per cent of the total) to which land treatment measures are being carried out on completed small watershed projects and the extent to which sedimentation is being reduced.

Concerning the second item, we believe the final environmental impact statement should contain a map (similar in quality to the project map - fig. 8) which shows both the proposed channels and existing woodlands. Both the project map and status of land clearing map (Appendix E) give some indication of the relationship between proposed channels and woodlands and it appears that much of the wooded land will be traversed by project channels thus greatly facilitating the clearing of the remaining 16,400 acres of forest land.

Again, we continue our basic endorsement of the project and congratulate the sponsors on their planning. Please have these comments included in the final environmental statement along with our comments for the public meeting March 4.

Sincerely,


Richard W. Bryan, Jr., Chairman
Water Control Projects Committee

LOUISIANA WILDLIFE FEDERATION
AFFILIATED WITH THE
NATIONAL WILDLIFE FEDERATION
1412 SIXteenth ST. N.W.
WASHINGTON D. C. 20036

P. O. Box 5552
Alexandria, La. 71301
February 28, 1974

Morehouse Soil and Water Conservation District
609 E. Madison
Bastrop, Louisiana 71220

Re: Public meeting on Bayou Bonne Idee watershed project March 4, 1974

Gentlemen:

In a meeting with representatives of the Louisiana Wildlife Federation and Delta Chapter of the Sierra Club in 1973, Mr. J. B. Earle, former State Conservationist for the Soil Conservation Service, stated that the Louisiana Wildlife Federation was opposed to the entire small watershed program and that the Federation didn't like any watershed projects in Louisiana.

As was often the case, Mr. Earle was simply mistaken. The Louisiana Wildlife Federation has studied the rather voluminous watershed work plan and draft environmental impact statement, we have studied the views of the Morehouse Wildlife Unit, Inc. and consulted with biologists of the Louisiana Wild Life and Fisheries Commission. Based on this research we have no objections to the project as proposed and we endorse the project. We do of course, reserve the right to comment further on any aspect of the project should the occasion arise.

It is apparent to us that some environmental damage, particularly minor reductions to some wildlife species, will result from project installation. But it is our opinion that these losses are accurately reflected in the environmental statement and that the project sponsors have taken many steps to mitigate these losses and to enhance other values. In addition, we believe that the project as proposed constitutes a good balance between the need to preserve environmental values and the necessity of earning a living from the land.

It is also apparent to us that the project sponsors have shown great concern, not only for wisely using public money, but for the overall quality of life for the people within the watershed area.

It is further our belief that the project sponsors have required the Soil Conservation Service to file an objective, accurate and comprehensive environmental impact statement.

In taking these two steps, the project sponsors have done everything in their power to prevent the delay of this project. And I want to

assure you that the Louisiana Wildlife Federation recognizes your efforts and that we will make no effort to delay or halt this project as presently planned.

Despite the multitude of false information that has been circulated about the Louisiana Wildlife Federation, we do not want to see America turned back to the days of the buffalo, we do not want to see school children kept home by flood waters and we are not against true progress.

What we do want, is to see that the laws of the land, such as the National Environmental Policy Act, are obeyed and that people who spend public money, part of which is our money, spend it wisely, in ways that will not harm others and in ways that will allow people to live in harmony with nature; in ways that will, for example, allow efficient farming and retaining clean water and wildlife habitat. And, obviously, the sponsors of this project are interested in the same thing.

We're delighted to see a 113-page draft environmental impact statement that contains factual, comprehensive information. The SCS has come a long way from the Lake Verret watershed project where no draft statement was prepared, the final statement consisted of two pages and the Louisiana Wildlife Federation, other organizations and agencies were denied the opportunity to comment.

But we can't help asking the Soil Conservation Service wouldn't it have been easier to have cooperated with the Louisiana Wildlife Federation in the first place, to have taken our suggestions seriously, to have complied with NEPA and to have attempted to devise environmentally sound projects? If the amount of time devoted to efforts to silence SCS critics and other resistive tactics had been applied to better planning and complying with the law, how much further down the road would be many projects today?

In conclusion, let us offer a few suggestions concerning the project and the EIS:

(1) If the Water Bank Program is expanded, we hope the project sponsors will make an effort to be included in the program as a means of continuing preservation of the wetland areas you wish to retain in the project area.

(2) If the development of camps and summer homes is anticipated along Bayou Bonne Idee, we hope the project sponsors will request the Parish Police Jury to pass a sewerage ordinance to prevent pollution of the bayou.


(3) We would like to see the post project study expanded to include a determination of the extent to which advocated land treatment measures are carried out and the extent to which sedimentation in Boeuf River and Bayou Bonne Idee actually decreases or increases.

(4) Pages 7 and 8 of the EIS indicate that assistance will be given in "establishing about 35 commercial recreation enterprises" pertaining mostly to hunting on 10,000 acres. We'd like to see the final statement indicate whether these commercial recreation enterprises are expected to be in the form of lease or pay-by-the-day arrangements. We would also like to know what interest has been demonstrated in establishing commercial waterfowl hunting opportunities on the wetlands to be maintained.

(5) We would like to suggest that the project sponsors provide a minimum of 30 days notice in advance of public meetings and an equal amount of time for comment on environmental impact statements. The letter to the Louisiana Wildlife Federation from the project sponsors was dated February 23, only 11 days in advance of the meeting. Our receipt of the draft statement and work plan followed by a few days, allowing even less time for preparation and comment.

I regret not being able to present the comments of the Federation in person, but I have a previous commitment with the Governor's Council on Environmental Quality March 4 and the limited notification of the public meeting has made any changes impossible. I would appreciate having the Louisiana Wildlife Federation's statement read at the public meeting, having it included in the official record of the meeting and the environmental impact statement.

Sincerely,


Richard W. Bryan, Jr., Chairman
Water Control Projects Committee

cc: Mr. Alton Mangum, State Conservationist
U. S. Soil Conservation Service

